Air Live®
Powered by OvisLink Corp.

MD-720

720P 2.8mm Wide Angle PoE Mini Dome IP Camera

User's Manual

www.airlive.com

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Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the A user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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1 Overview

This user's guide explains how to operate this camera from a computer. A user should read this manual completely and carefully before you operate the device.

1.1 Introduction

The AirLive MD-720 is a high-end megapixel network camera designed for professional indoor surveillance and security applications. Megapixel (MP) IP cameras are now available that offer a huge jump in image quality compared to the conventional surveillance cameras. This new model complements an architecture and software that are based on variations for professional indoor surveillance and security applications. The possibility of viewing video from AirLive IP Cameras over the Internet is not the only one of benefits. AirLive MD-720 is also designed to offer high-performance and is equipped with PoE port, ensuring to power IP camera and providing network activity via one RJ45 network cable. This advance provides an easier installation, the lower cable costs and allows placement of AirLive POE cameras in locations with power limitation. The AirLive MD-720 is an ideal IP camera for the applications such as hallways or stairwell.

1.2 Features

This manual will illustrate the steps of how to setup and operate this IP camera, so you'll also soon be enjoying the benefits of these product features.

- Miniature Size Dome
- 30FPS at 1280x720
- 802.3af PoE Port
- 2.8mm Wide Angle Lens
- Low Lux Sensor for Ultra Bright Images
- Micro SD Card Slot for Local Storage
- Built-in MIC, Audio Port, DIDO
- Clear Motion Technology for Moving Objects
- WDR Enhanced
- Free 64-Channel Recording Software

1.3 Product Specification

Model		MD-720
Camera	Camera Type	Indoor Dome Type
	Max Resolution	1280X800
	Image Sensor	1/4" Mega Pixel Color CMOS Sensor
	Sensor Resolution	1280X800
	Lens Type	Board Lens
		2.8mm, F2.0
	Night Vision	none
	Max IR Distance	none
	Minimum Illumination	0.2 Lux (color)
	Mechanical IR-Cut Filter	none
	Auto Iris	none
	Viewing Angle	81° (H) 50° (V)
	Pan/Tile Control	E-PTZ
		Pan Degree-± 172°
		Tilt Degree-± 79°
	Analog Video Out	none
Video	Video Compression	H.264 MPEG4 MJPEG
	Video Profile	10

	Resolution and Frame Rate	30 fps @ 1280 X 800
		30 fps @ 1280 X 720
		30 fps @ 640 x 480
		30 fps @ 320 X 240
		30fps @ 160 X 120
	Streaming	Multi-profile streaming
		Streaming over UDP, TCP, or HTTP
		M-JPEG streaming over HTTP (for non IE browser)
		3GPP mobile view
		Configurable frame rate and bandwidth
		Support both CBR and VBR
	Region of Interest	None
	Image Processing	AE, AWB
		Noise reduction
		Color, brightness, sharpness, contrast, Hue
		Mirror/Flip
		Privacy Masks
		Text, time and date OSD
	Digital Zoom	10x
Audio	Audio Encoder	G.711 μ law, a law, AMR
	Audio Streaming	Two-way
	Audio Input/Output	1 Line in, 1 Line out
Network	Ethernet	One RJ45 Port; IEEE 802.3u Compliant 10/100 Mbps Fast Ethernet with Auto-MDIX
	PoE	IEEE802.3af
	Supported Protocols	TCP/ IP, DHCP, PPPoE, ARP, ICMP, FTP,SMTP, DNS, NTP, UPnP, Bonjour, RTSP, RTP, HTTP, TCP,UDP, 3GPP/ ISMA RTSP
	Security	Password protection
		IP filter
		HTTPS
	Users	Up to 10 simultaneous users
LED and Button	Power LED	Amber Color
	Link/Act. LED	Green Color
	Reset Button	Reboot and Factory Default (Push and Hold Over 5 Sec)
General	Network Processor	DSP Base
	System ROM	16 MByte NAND Flash
	System RAM	128Mbyte DDR SDRAM

	Power Supply	none
	Power Consumption	8 Watts Max.
	Connector	RJ-45 10BaseT/100BaseTX
		Reset button
	Environment	Operation: Temp: 0℃ ~ 50℃ Humidity: 20% ~ 85% non-condensing
		Storage: Temp: -15℃ ~ 60℃ Humidity: 0% ~ 90% non-condensing
	SD card slot	Micro SD
	Dimension	HxWxD:60.6x60.6x99 (φ)mm
System Integration	Software	CamPro Express 64,CamPro Professional
		Search & Installation-IP Wizard II
	Event Triggers	Motion detection
		External input via DI interface
	Motion Detection	10
	Event handler	FTP or NAS file upload
		E-mail alter
		HTTP, and TCP notification
		DO (digital output) alarm
	UPNP	Yes
	Application Programming Interface	ONVIF
		Open API for software integration
		SDK
	Video Buffer	Pre- and post- alarm buffering
	Alarm Triggers	Intelligent video motion detection and external input
	Alarm Events	File upload via FTP or email
		Notification via email, HTTP
		External output activation
		Save to SD card
		Network storage
	Continuous recording	Yes
Viewing System	OS	Windows® XP, Vista, 7
	Browser	IE 6.0 or later, Firefox 2.0 or later, Safari
	Cell Phone	With 3GPP player
	Video Player	VLC, Quick Time, Real Player, Core Player

1.4 System Requirement

For normal operation and viewing of the network camera, it's recommended that your system meets these minimum requirements for proper operation:

Item	Requirements
CPU	Pentium 4 2.8GHz (or equivalent AMD)
Graphic Card	256 MB RAM graphic cards(or equivalent on-board graphic cards)
RAM	1G
Operating System	Windows 2000, Windows 2003, Windows XP, Windows Vista, Windows 7, and Mac OS X Leopard
Web Browser	Internet Explore 6 or later

Note: Please keep updating the latest Windows software and service package. (Ex: Net Framework, Windows Media Player, Enhance ActiveX Security)

2 Package Contents and Installation

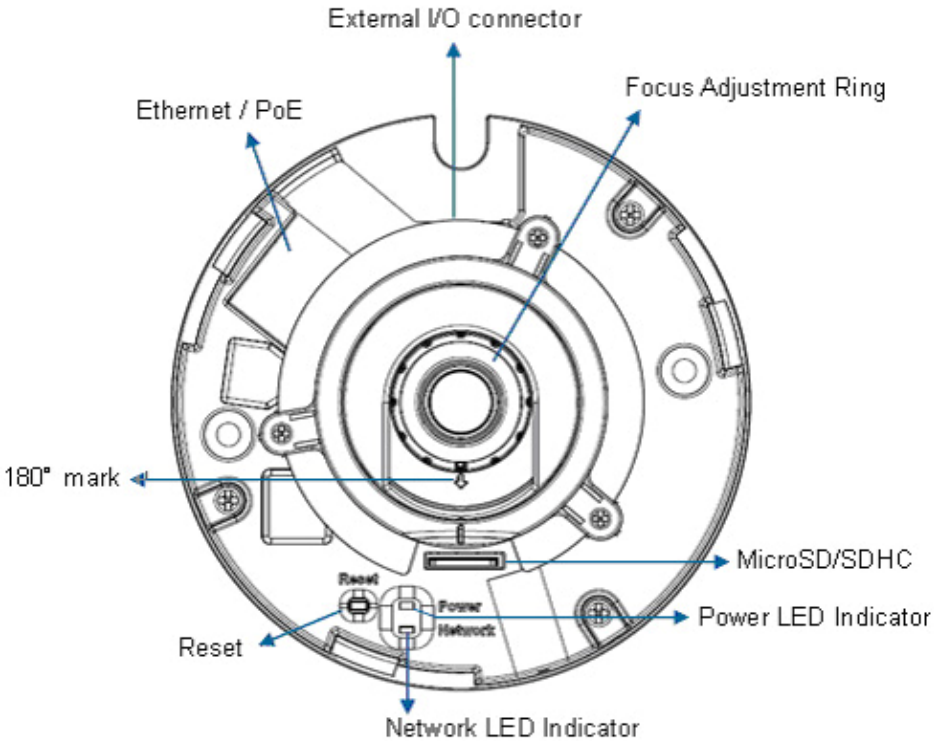
2.1 Package Content

A user can find the following items in the package as below:

1. **AirLive MD-720** is the main element of the product.
2. **Bundle CD** include Setup Wizard II, CamPro Express64, Video Tutorial, Quick Start Guide, User Manual and other tools
3. **Quick Start Guide** provides important information and instructions for installing this device.
4. **Accessory Package**

2.2 Hardware Overview

Inside View



LED Indicator

LED	Color	Indication
Network	Blue	Flash blue while network activity.
Power	Red	Steady red for booting up process. Steady red 30 Seconds when WPS configure failed.
	Blue	Steady blue for booting up completion
	Purple	Flash purple during firmware upgrading; when reset button pressed for at least 5 sec. to factory default
	Unlit	When you press reset button or Power off

Reset: When the device is powered on, press the Reset Button to reboot the device. Or hold the Reset Button for 10 seconds to set the settings back to factory default.

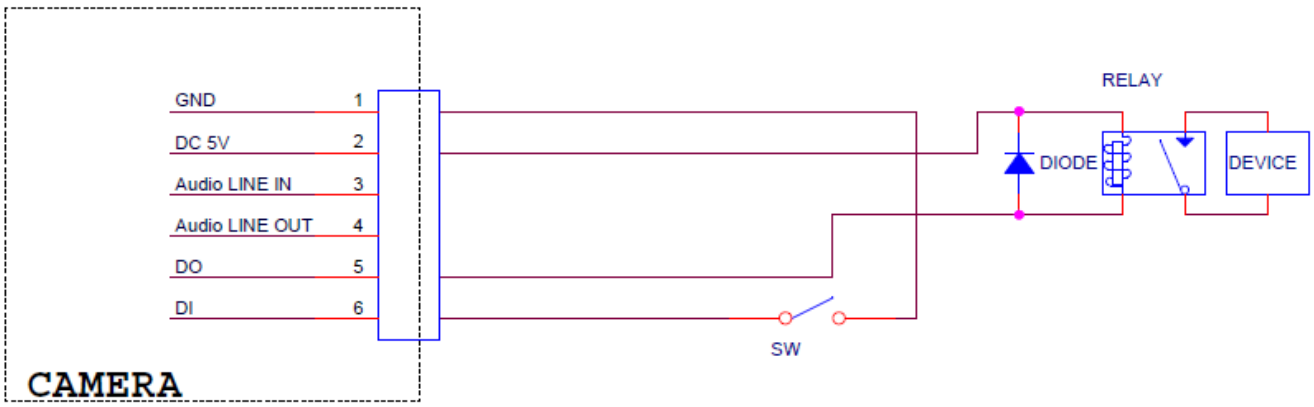
Reset process: Press reset button until indicator Unlit → steady red (booting up process) → steady blue (booting up completion)

Reset to default process: Press until indicator steady blue → steady red (booting up process) → steady blue (booting process completion)

Power Mode

PoE Mode	Power Requirement	PoE (IEEE802.3af) with Class 3
	Power Consumption	2.5W

I/O Terminal Block View

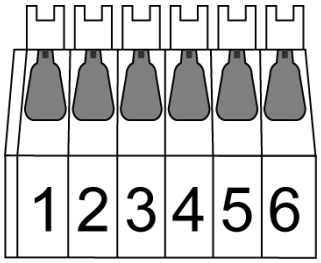


I/O Terminal Block Pin Definition

This Camera provides an external I/O terminal block which is used to connect input/ output devices.

The pin definitions are described below.

PIN	Definition	Description	Max. V/A
1	Ground		-
2	+ 5V DC		5V DC 0.5W
3	AUDIO_In(+)	Unbalanced, 1.4Vp-p, 1Vrms, terminal block	-
4	AUDIO_In(+)	Unbalanced, 1.4Vp-p, 1Vrms, terminal block	-
5	Digital Output 1	Uses an NPN transistor with the emitter connected to the GND pin. If used with an external relay, a diode must be connected in parallel with the load for protection against voltage transients.	100 mA 24V
6	Digital Input 1	Connected to GND to activate, or leave floating (or unconnected) to deactivate.	30V DC

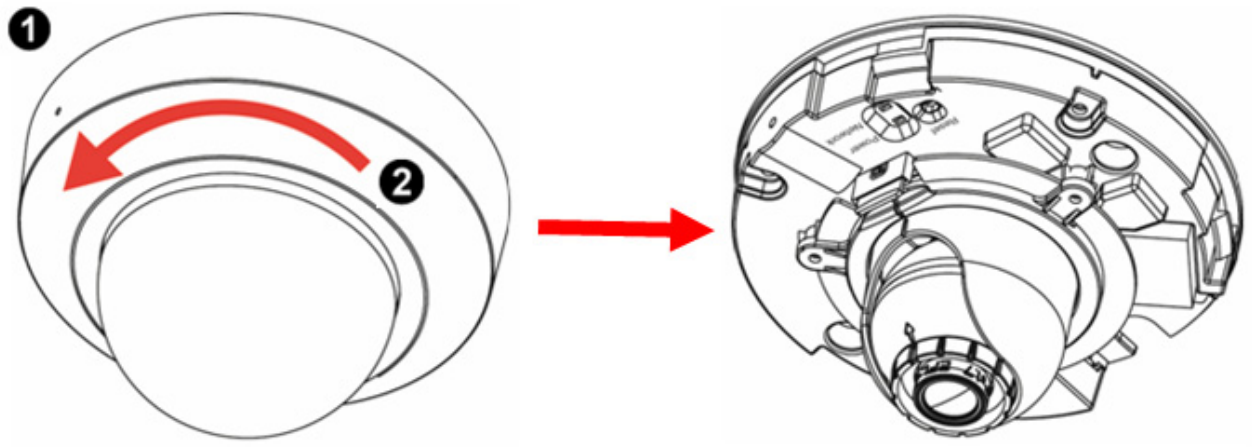


2.3 Hardware Installation

Follow these steps to install the AirLive MD-720 and connect all cables:

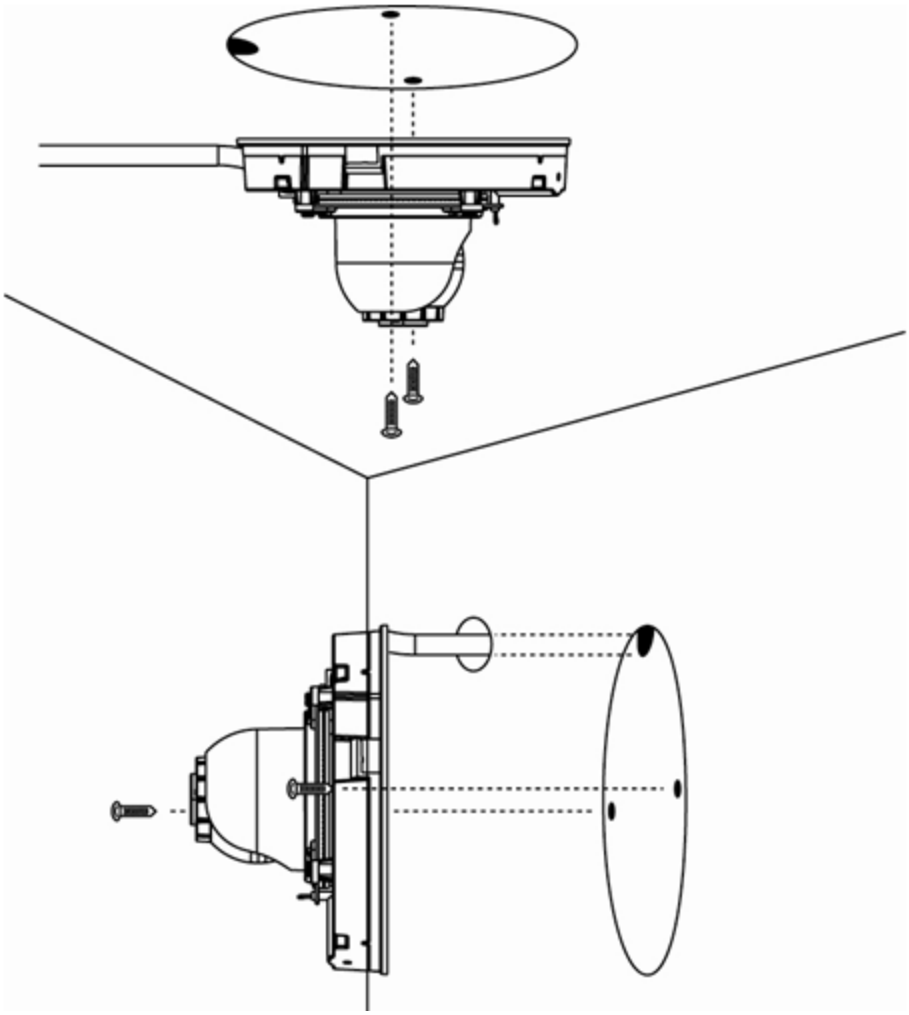
A. Hardware Installing

1. Before connecting the Ethernet cable, please use one hand to hold top cover and another hand to press the bottom of camera.
2. Then shift top cover to left (counter-clockwise) to open the dome cover.



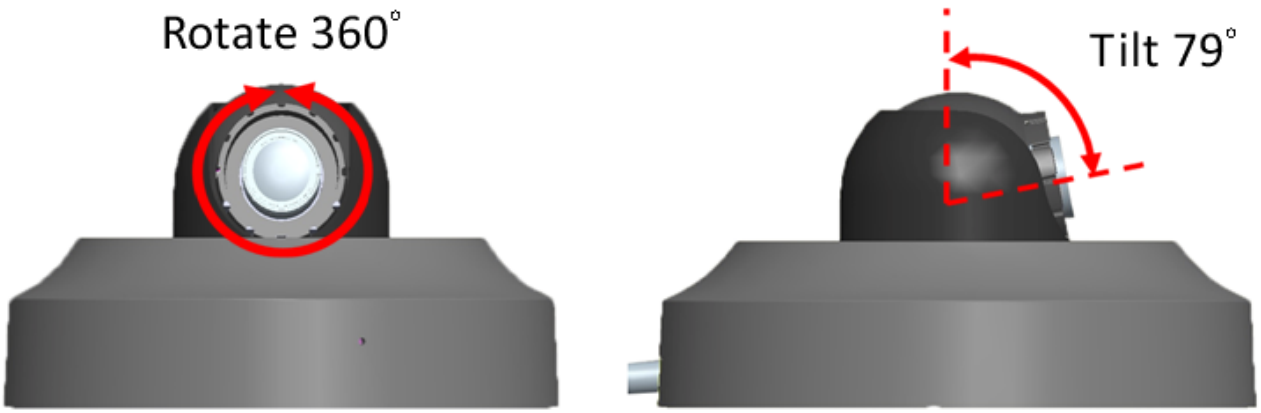
B. Wall mounting and Ceiling mounting

1. Attached the drill template to the wall. Drill three holes into the wall, which two for screws and one for cable (if you want to route cables through conduit hole). Then hammer the supplied plastic anchors into the screw holes and secure the plate with supplied screws.
2. Align the three holes on the base of camera with the two plastic anchors on the wall or ceiling. Insert the supplied screws to the corresponding hole and screw them.
3. Adjust the angle of camera to aim the shooting area.

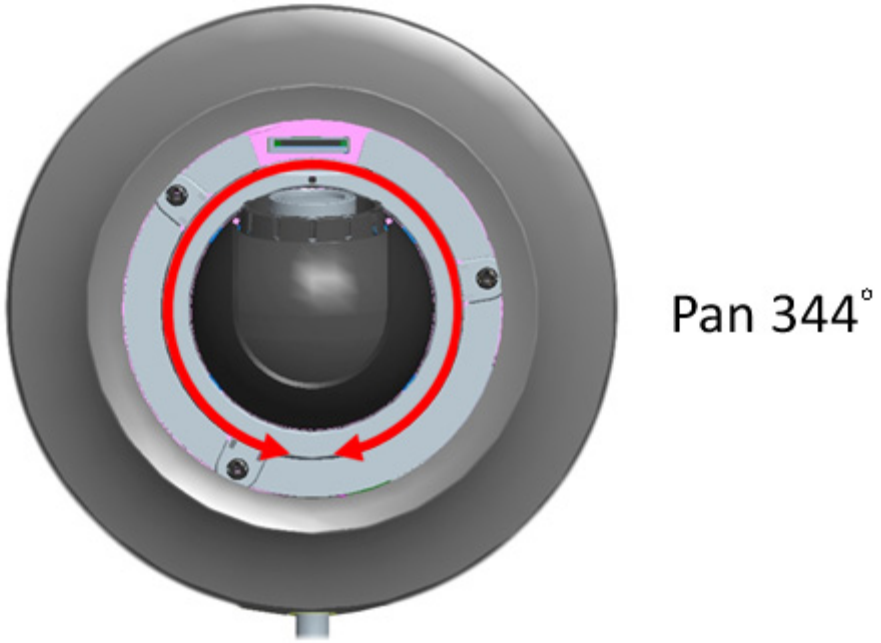


Note:
When using this device, please use an Ethernet cable without the strain relief boot.

C. Lens focus range



Rotate Notice: DO NOT rotate the lens over 2 rounds. Otherwise, the camera lens module will be damaged.



D. Connect cables and power supply

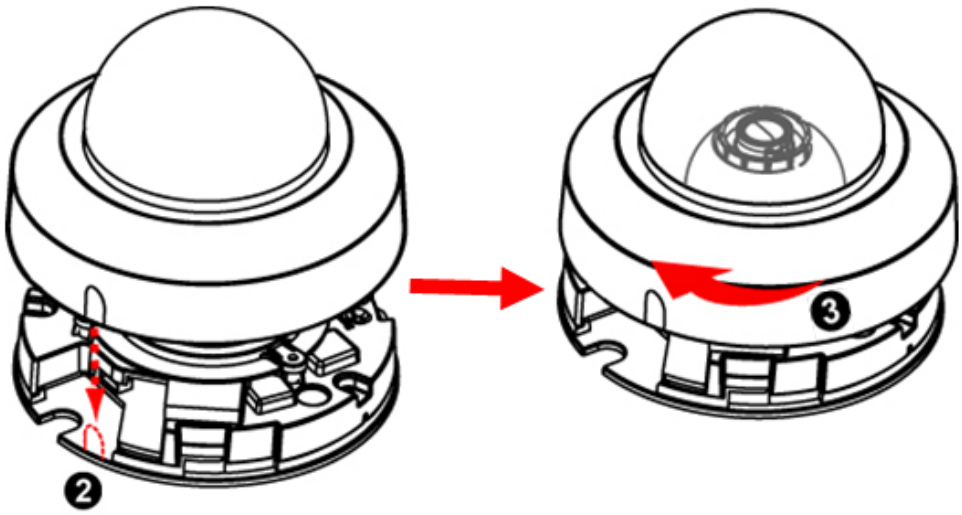
1. The camera has only Power over Ethernet (PoE) built-in (there is no DC connector inside.)
2. Using a standard RJ-45 network cable, connect the IP Camera to a PoE-enabled Hub / Switch / Router.

Note:

If using a non-PoE switch, please use a PoE power injector to connect the camera

E. Completion

1. Clean the dome bubble to remove the dust and finger print.
2. Align the slide cover down to the U-shape position
3. Tighten the dome cover to the clockwise direction and make slide cover reaching the routing hole.

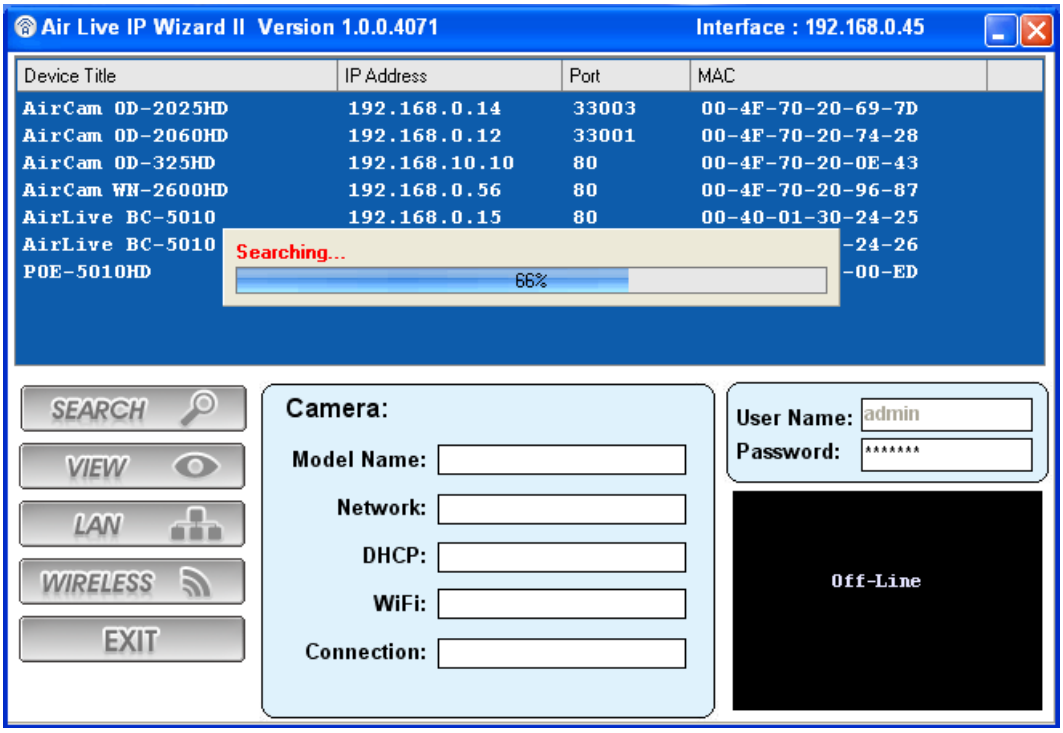


4. The installation is complete now.

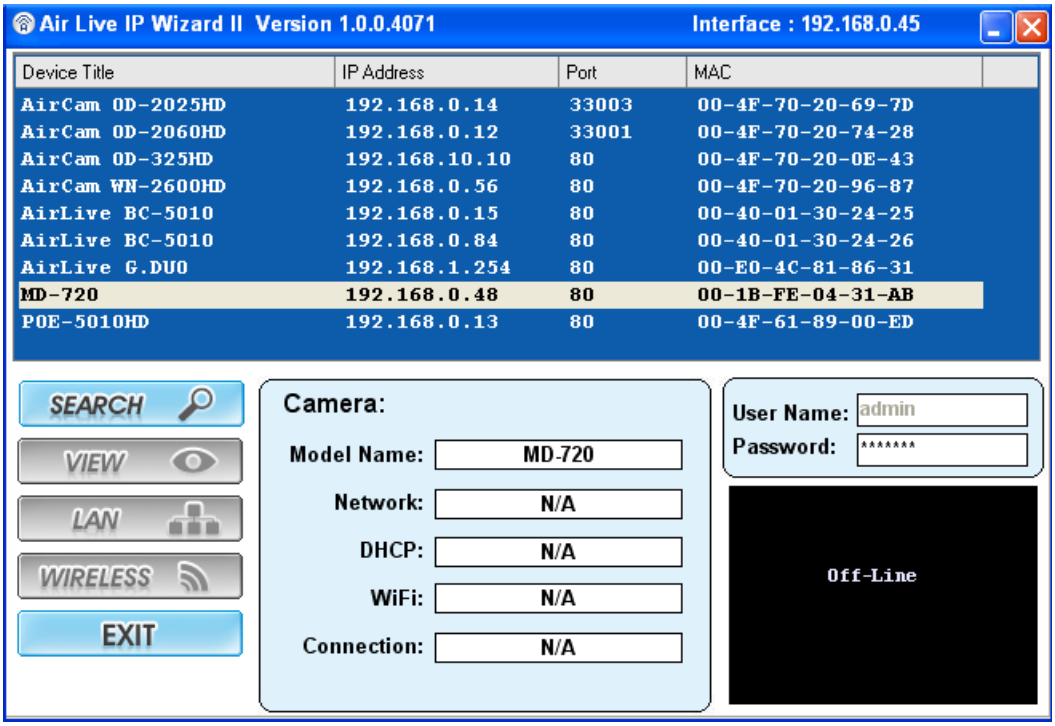
2.4 Connect to IP Camera

1. Insert the bundle CD into your PC/Laptop.
2. Auto Run Screen then shows up; click “Install Software → Camera IP Finder Utility” to install the configuration tool software.

3. After completing installation, run the configuration tool software.



4. The Software scans the network and finds the IP Camera and then lists them in the dialog box.



5. If the Camera's IP address is in the same IP segment as your LAN, select the founded IP Camera and double click on the item. Then, the default browser will show up and connect to the IP camera's Web automatically.

3 Using IP Camera via Web Browser

3.1 Windows Web Browser

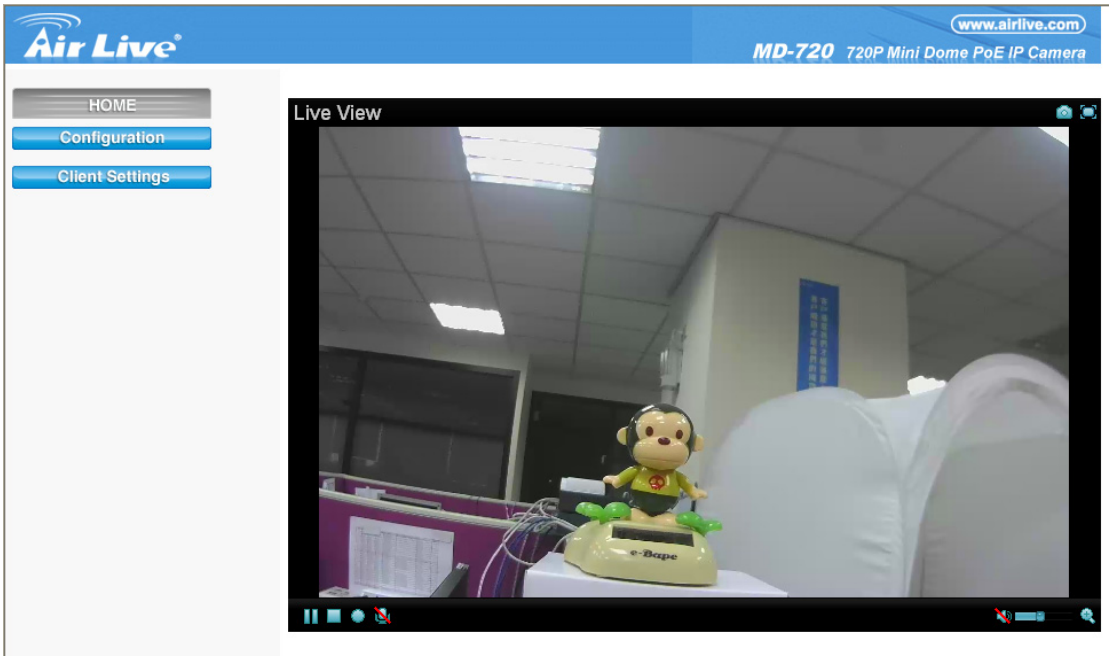
1. Open your web browser, and enter the IP address or host name of the IP camera in the Location / Address field of your browser.
   Note: If you only want to view the video without accessing Setting screen, enter "http://<IP>/index2.htm" as your web URL.

2. Use the default account "**admin**" and default password "**airlive**".

Connect to 192.168.0.48
The server 192.168.0.48 at MD-720 requires a username and password.
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
使用者名稱(U):
admin
密碼(P):
****
記憶我的密碼(R)
確定
取消

   Note: The default user name "**admin**" and the password "**airlive**" are set at the factory for the administrator. You can change them in the Account Menu. (Please check "Configuration → Basic Setup → Account")

3. The monitor image will be displayed in your browser. In the left side of main configuration are "Configuration" and "Client Setting". For more details, you can check the following chapters.



3.2 Mac Web Browser

1. Click the Safari icon, and enter the IP address of the IP camera in the Location / Address field of your browser.
   Note: If you only want to view the video without Setting screen “http://<IP>/index2.htm” as your web URL.

2. Enter the default account “**admin**” and default password “**airlive**”.
   Note: The default user name is “**admin**” and the default password is “**airlive**” . You can change them in the Account Menu (Please check “Configuration → Basic Setup → Account”)

Safari File Edit View History Bookmarks Window Help
Thu 4:50 PM
Apple
Google
Store
Support
Search
To view this page, you need to log in to area "P5110 Megapixel IR Pan/Tilt IP Camera" on 10.0.0.105.
Your password will be sent in the clear.
Name:
Password:
Remember this password in my keychain
Cancel
Log In
The world's thinnest and lightest 17-inch notebook.
Introducing the new 17-inch MacBook Pro.
Featuring a breakthrough 8-hour battery.
Watch the video
Watch the keynote
MacBook Pro

4 Operating IP Camera via Mobile Phone

4.1 Mobile Phone Viewing

1. **3G Mobile Phone Streaming Viewing**

For 3G mobile phone viewing, type “rtsp://<IP>:<PORT>/video.3gp ” into your 3G Streaming Link. <IP> is the Public IP address of your IP camera; <PORT> is the RTSP port of your IP camera (Default value is 554.) Example: rtsp://100.10.10.1:554/video.3gp
Note: You can also use RTSP clients (RealPlayer, VLC, QuickTime Player…etc.) to view RTSP streaming, just type in “rtsp://<IP>:<PORT>/video.3gp” as the Player URL

2. **2.5G Mobile Phone WAP Viewing**

For 2.5G mobile phone viewing, type “http://<IP>/mobile.wml” into your 2.5G WAP Browser. <IP> is the Public IP address of your IP camera.

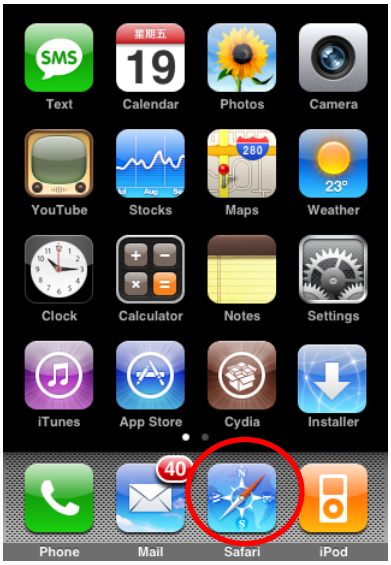
3. **2.5G Mobile Phone Browser Viewing**

For 2.5G mobile phone viewing, type “http://<IP>/mobile.wml ” into your 2.5G Web Browser. <IP> is the Public IP address of your IP camera.

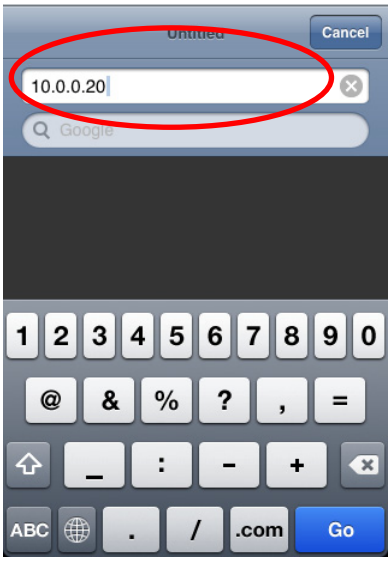
4.2 Using IP Camera via iPhone

You can access to your IP camera via your iPhone. Please follow the setting process below. Then you can use the Web UI via iPhone.

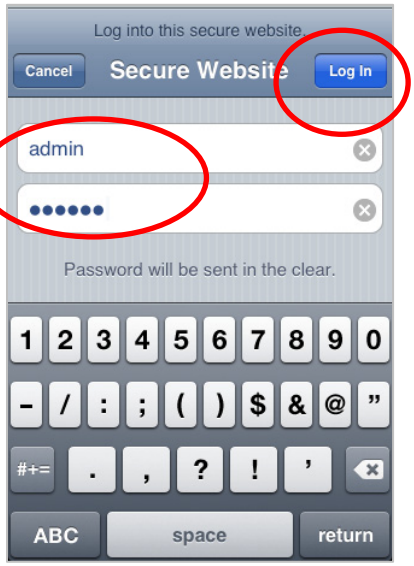
A. Select Safari function



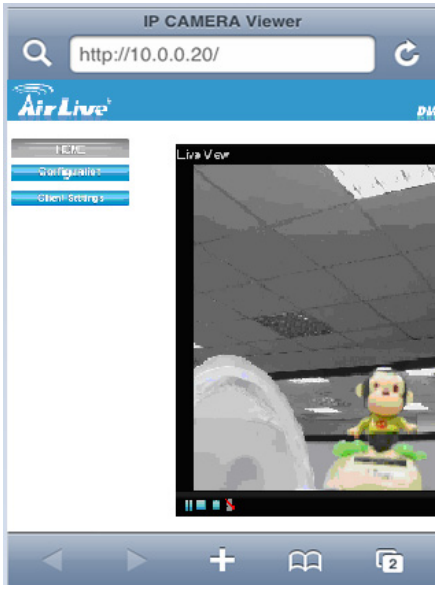
B. Type IP address in your web link.



C. Type name and password. Default value is **admin / airlive.** Then click Login In



D. The Web User Interface and live image will show up in the middle of screen.

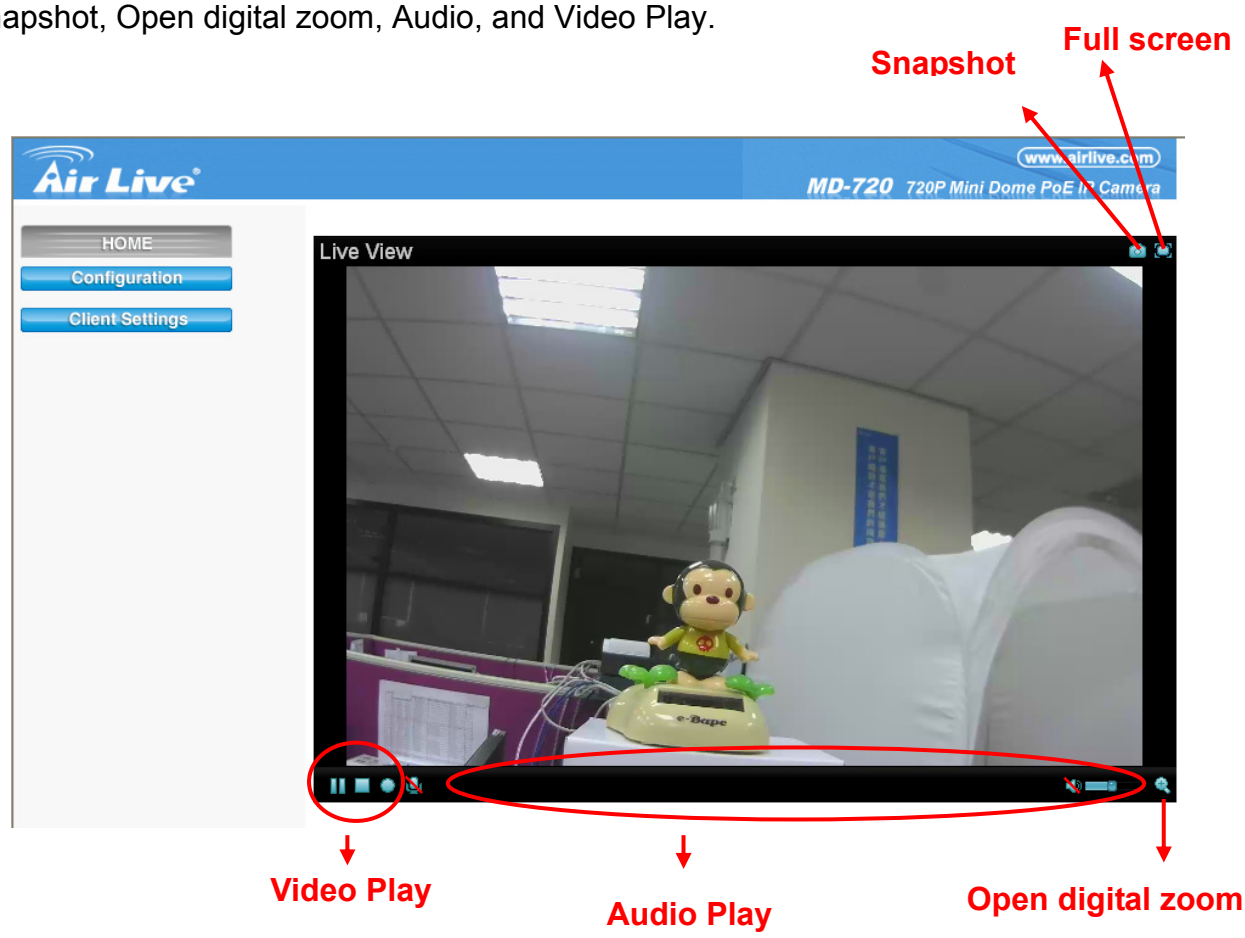


Note: The image is continuous snapshots, not video. Thus, live image can't be recorded here.

5 Configuration of Main Menu

In the left side of main configuration are **Configuration and Client Settings**. For more details, please check the following Chapters.

In the right side, you can control Live View in your main Browser. The functions include Snapshot, Open digital zoom, Audio, and Video Play.



5.1 Live View

1. Snapshot

You can capture an image by clicking the camera icon and save it in the operating computer.

Symbols	Meaning
	A snapshot window appears after clicking the icon.
	Save the picture captured by snapshot into your computer.
	Return to the view screen
	full screen

2. Digital zoom in / out the image via the monitor window

A. Click to display the digital zoom in window.

B. Pull the to adjust the digital zoom range, and it will be showed on the above window.

C. Use the left click of your mouse to move to anywhere in the window area.

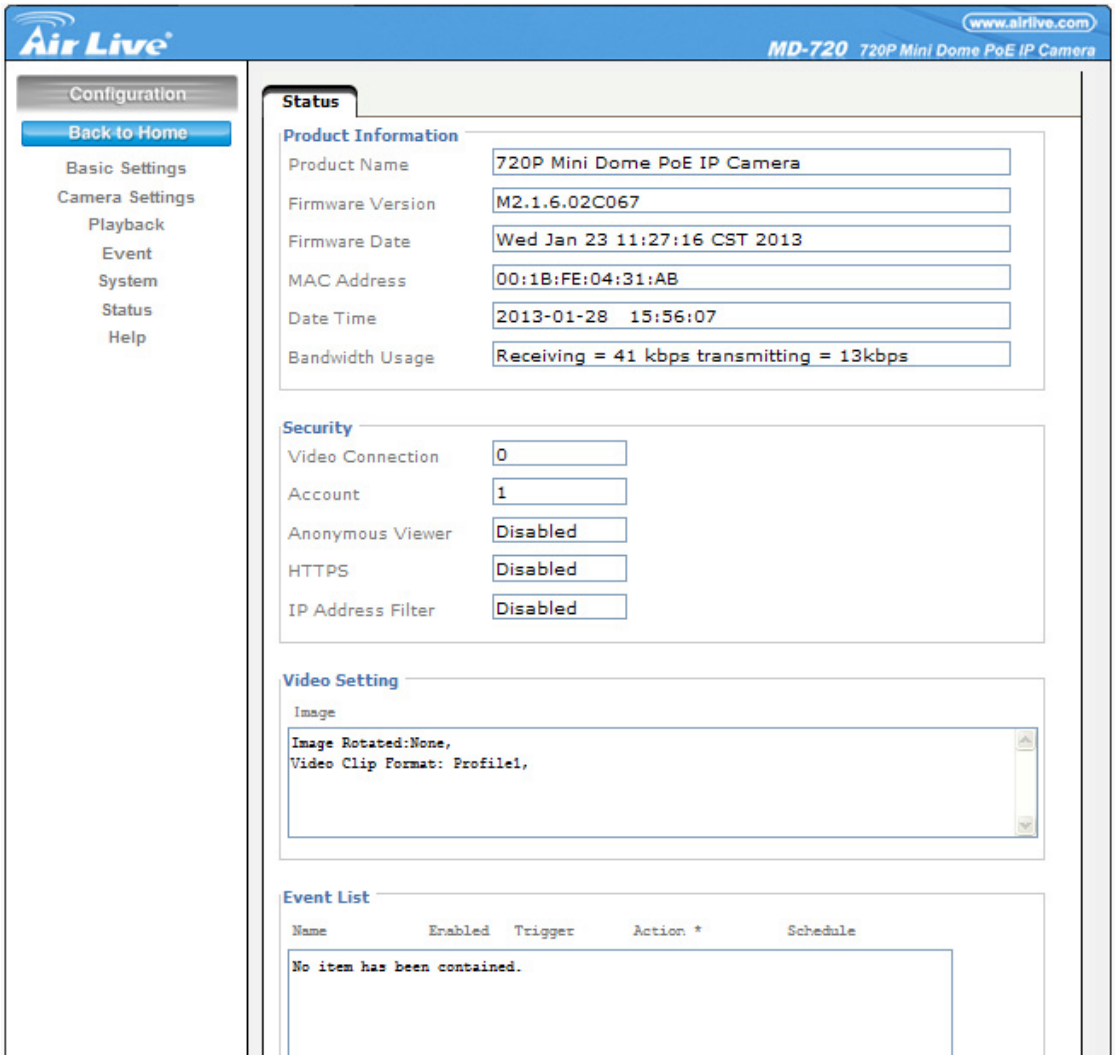
3. Video play buttons

Symbols	Meaning
	Pause the current video stream for a moment.
	Play the video stream.
	Stop the current displayed video.
	Record the current video stream.

Note: Concerning the recording storage requirement of your hard disk, please refer to the APPENDIX / B. Storage Requirement Table.

5.2 Configuration

This function is only for the Administrator. Click “Configuration” on the home page of web user interface to get into the Information, Basic Setup, Live View, Playback, Event and System Settings menu.



1. Basic Settings

Click Basic Settings. There are sub-menus including Account, Network and Date Time. For more detail information, you can refer to Chapter 6.

2. Camera Setting

Click Camera Setting. There are sub-menus including Video, Image and E-PTZ Setting. For more detail information, you can refer to Chapter 7.

3. **Playback**
   Click Playback. There are sub-menus including Client PC, Network Storage and Local Storage. For more detail information, you can refer to Chapter 8.

4. **Event**
   Click Event. There are sub-menus including Event Server, Event List, Motion Detection, Tampering Detection and Schedule. For more detail information, you can refer to Chapter 9.

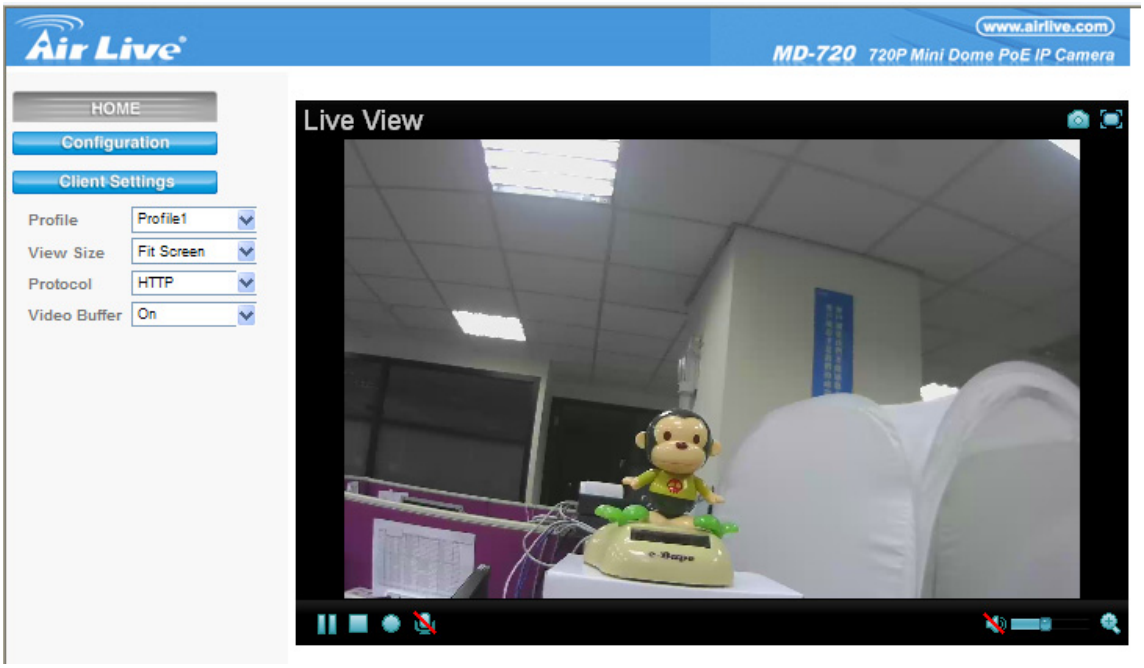
5. **System**
   Click System. There are sub-menus including Maintenance, Date Time, Security, Network Basic, Network Advanced, Digital I/O, LED and System Log. For more detail information, you can refer to Chapter 10.

6. **Status**
   Click Information. It provides the general information of the device such as Product Information, Security, Video Setting, Event list, Network and Port status.

7. **Help**
   Click Help. There is detail description of all functions.

5.3 Client Settings

This function is only for the client. Click this button to control Profile, View Size, Protocol, and Video Buffer.



1. Profile

Click the drop-down menu to choose one of the five profiles for the Live View.

2. View Size

Select the desired view size of image resolution between Fit Screen and Full Screen.

3. Protocol

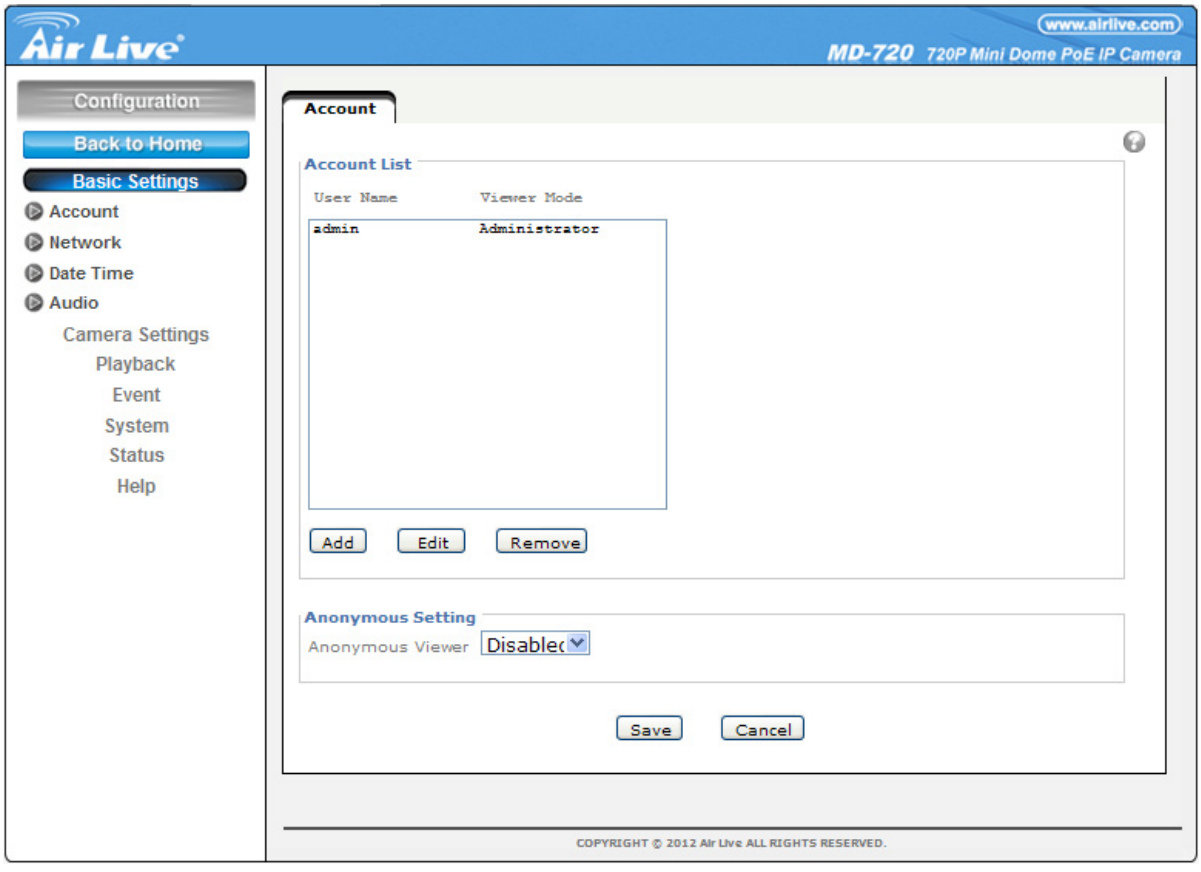
Select the transferring protocol among TCP, UDP, and HTTP.

4. Video Buffer

Turn the Video Buffer function On / Off. The Video Buffer function makes the streaming more smoothly in unsteady network environment, but might cause a little delay in live viewing

6 Configuration-Basic Setting

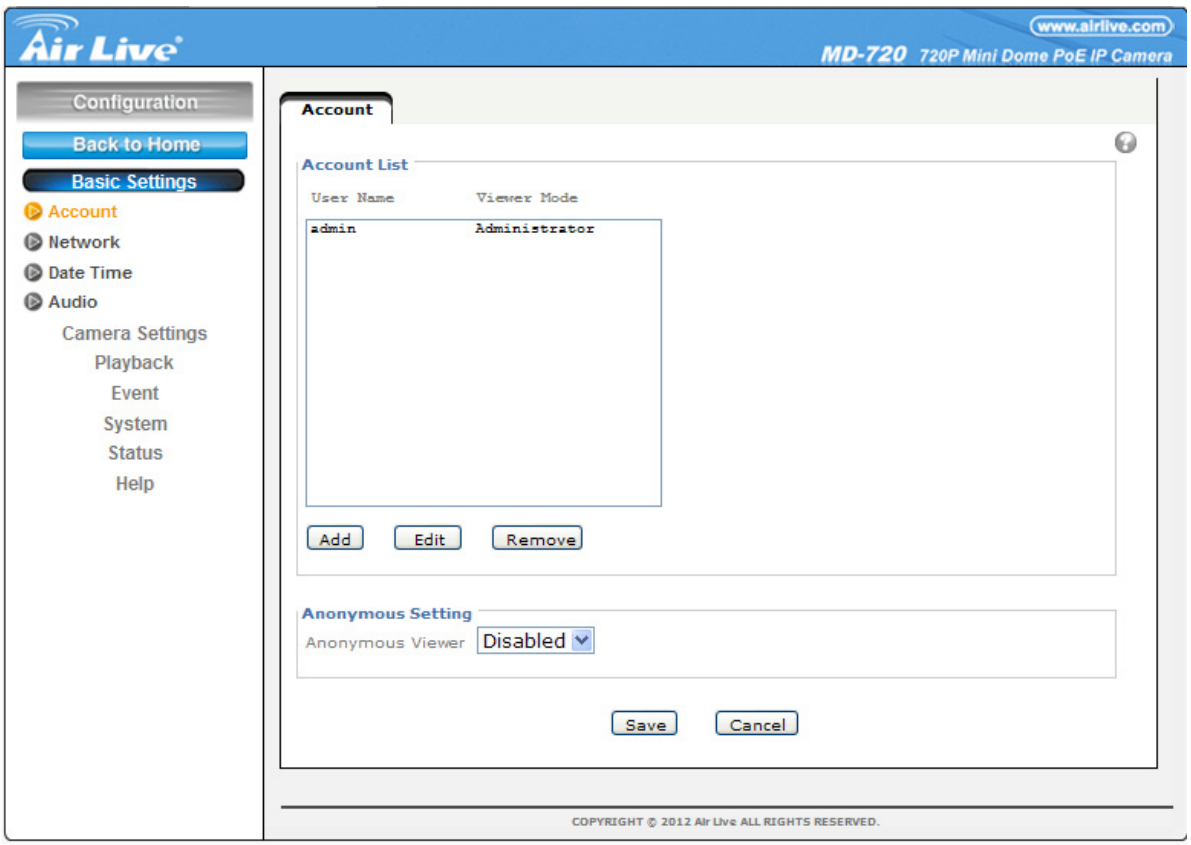
Click the **Basic Setting** to display the sub-menus including **Account, Network, Date Time** and **Audio**.



6.1 Account

1. Account List

The device default account and password setting is “admin / airlive”. That means everyone who knows IP address can access the device including all configuration. It is necessary to create a new password if the device is intended to be accessed by specific ones.



Click "**Add**" to create the accounts to the specific users. There are 1 default account and 9 accounts that you may assign 3 different viewer modes as you wish. The instruction of 3 viewer modes listed as below:

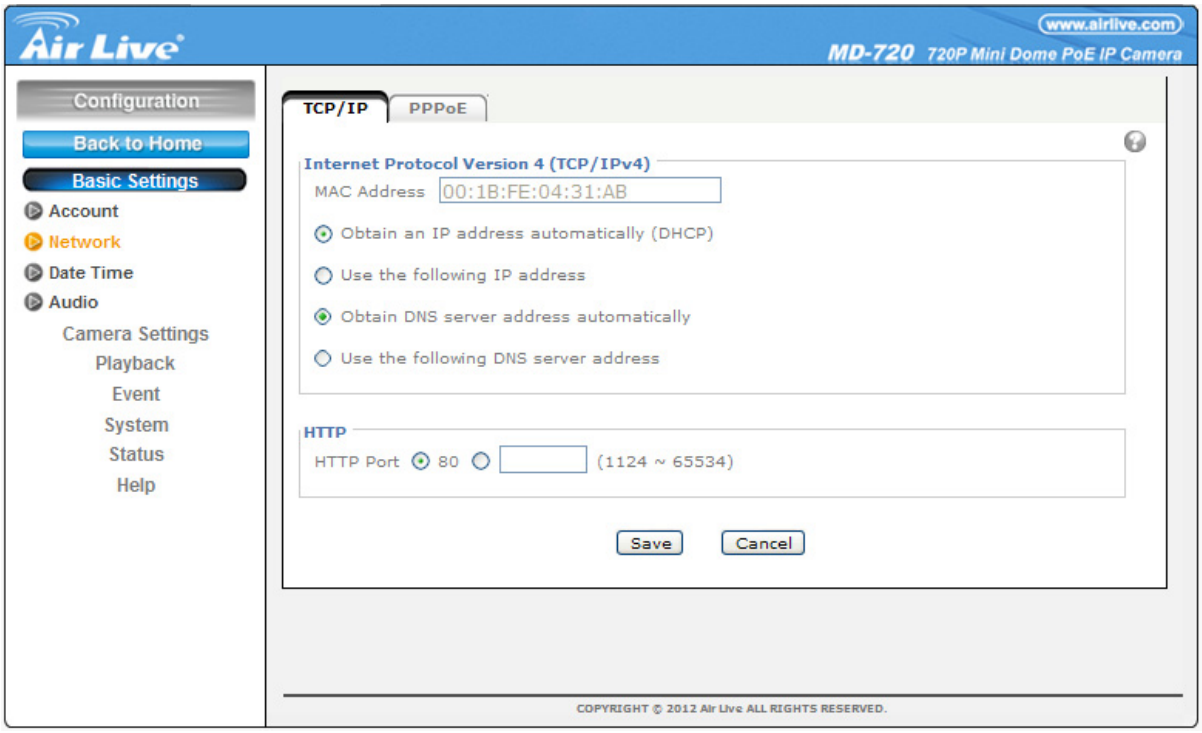
- Viewer: It only allows the user to access to the Live View page.
- Operator: It allows to view the Live View page, create/modify events, and adjust certain others settings.
- Administrator: It allows the user to watch the Live View and access all configurations.

2. Anonymous Setting

There is a drop-down menu for "Anonymous viewer" to disable or enable the function.

6.2 Network

Click the **Network** to display the sub-menus including **TCP/IP and PPPoE.**



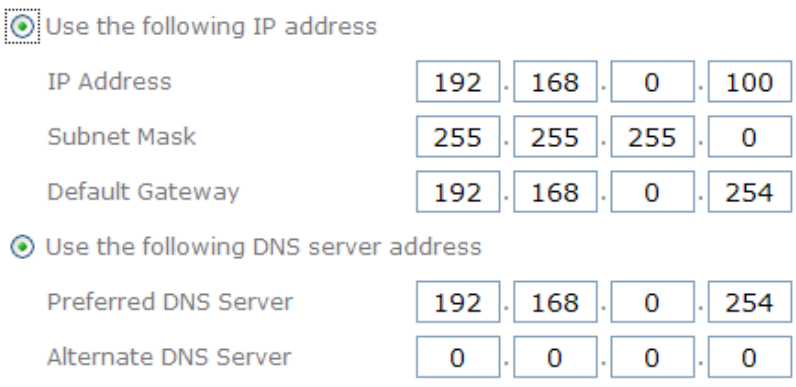
1. TCP/IP

Internet Protocol Version 4 (TCP/IPv4)

- Obtain an IP address automatically (DHCP): If a DHCP server is installed on the network, to select this while the IP address is assigned by the DHCP server.

- Use the following IP address: Select this option when the fixed IP address is set.

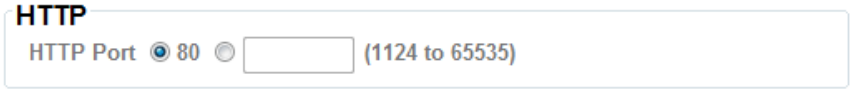
- IP address: Enter the IP address of the device.
- Subnet mask: Enter the subnet mask.
- Default gateway: Enter the default gateway.


Use the following IP address
IP Address 192 . 168 . 0 . 100
Subnet Mask 255 . 255 . 255 . 0
Default Gateway 192 . 168 . 0 . 254
Use the following DNS server address
Preferred DNS Server 192 . 168 . 0 . 254
Alternate DNS Server 0 . 0 . 0 . 0

- **Obtain DNS server address automatically:** Select this to obtain the address of DNS server automatically.
- **Use the following DNS server address:** Select this when you set the fixed address as the IP address of DNS server.
  - Primary DNS server: Enter the IP address of the primary DNS server.
  - Secondary DNS server: Enter the IP address of the secondary DNS server, if necessary.

HTTP

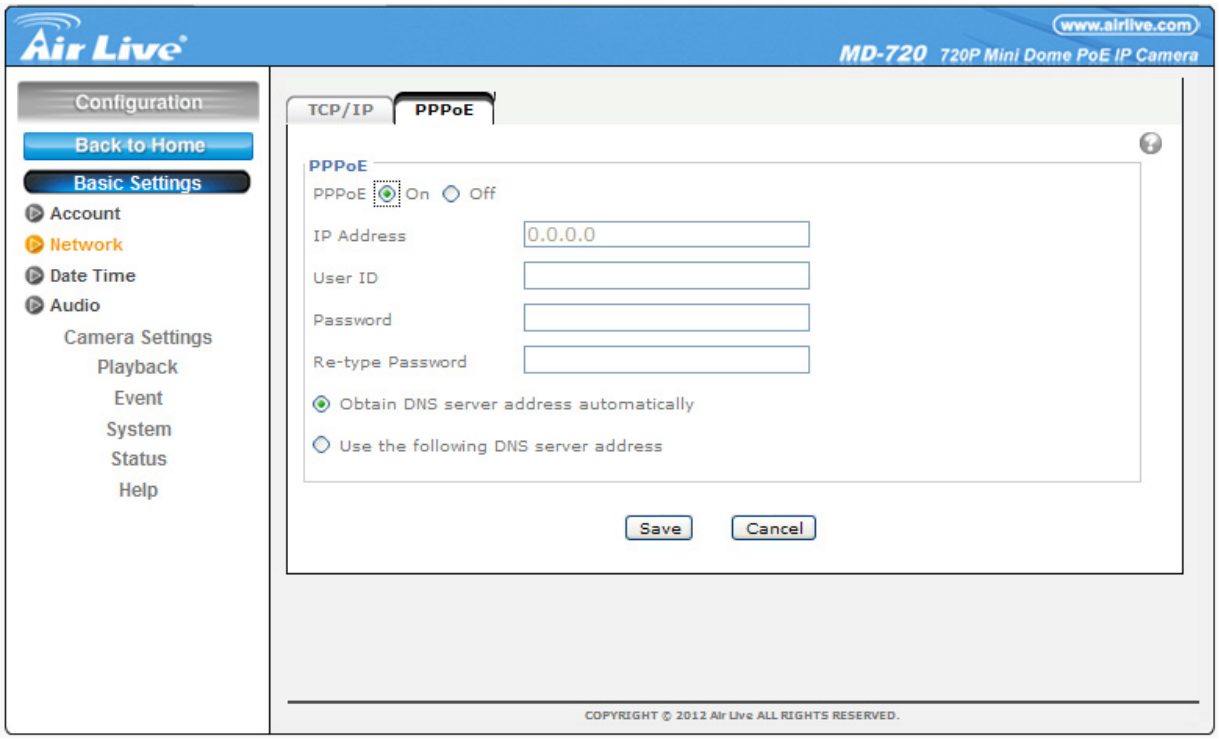
- HTTP port number: Select **80** in general situations. If you want to use a port number other than 80, select the text box and enter a port number between 1024 and 65535.
  - When you have set the HTTP port number to a number other than 80 on the Network Setting screen in the Setup Program, access the device by typing the IP address of the device on the web browser as follows:
    Example: when HTTP port number is set to 2000 http://192.168.1.100:2000/



Note: Reboot the IP Camera after the network setting has been made.
Note: If you connect the IP Camera with your computer directly, the default network domain of camera is 192.168.1.xx

2. PPPoE

If your ISP provides Dynamic IP with authentication by username and password, type all PPPoE information in this part. When using the PPPoE function, you need to turn on the DDNS or IP Notification function at the same time.



- IP address: The IP address is obtained at the PPPoE connecting with network.
- User ID: Enter the user ID for authentication necessary of PPPoE connections. Type it up to 64 characters.
- Password: Enter the password for authentication necessary of PPoE connections. Type it up to 32 characters.
- Re-type password: Re-type the password to confirm.
- Obtain DNS server address automatically: Select this to obtain the address of DNS server automatically.
- Use the following DNS server address: Select this when you set the fixed address as the IP address of DNS server.
    - Primary DNS server: Enter the IP address of the primary DNS server.
    - Secondary DNS server: Enter the IP address of the secondary DNS server.

Note:

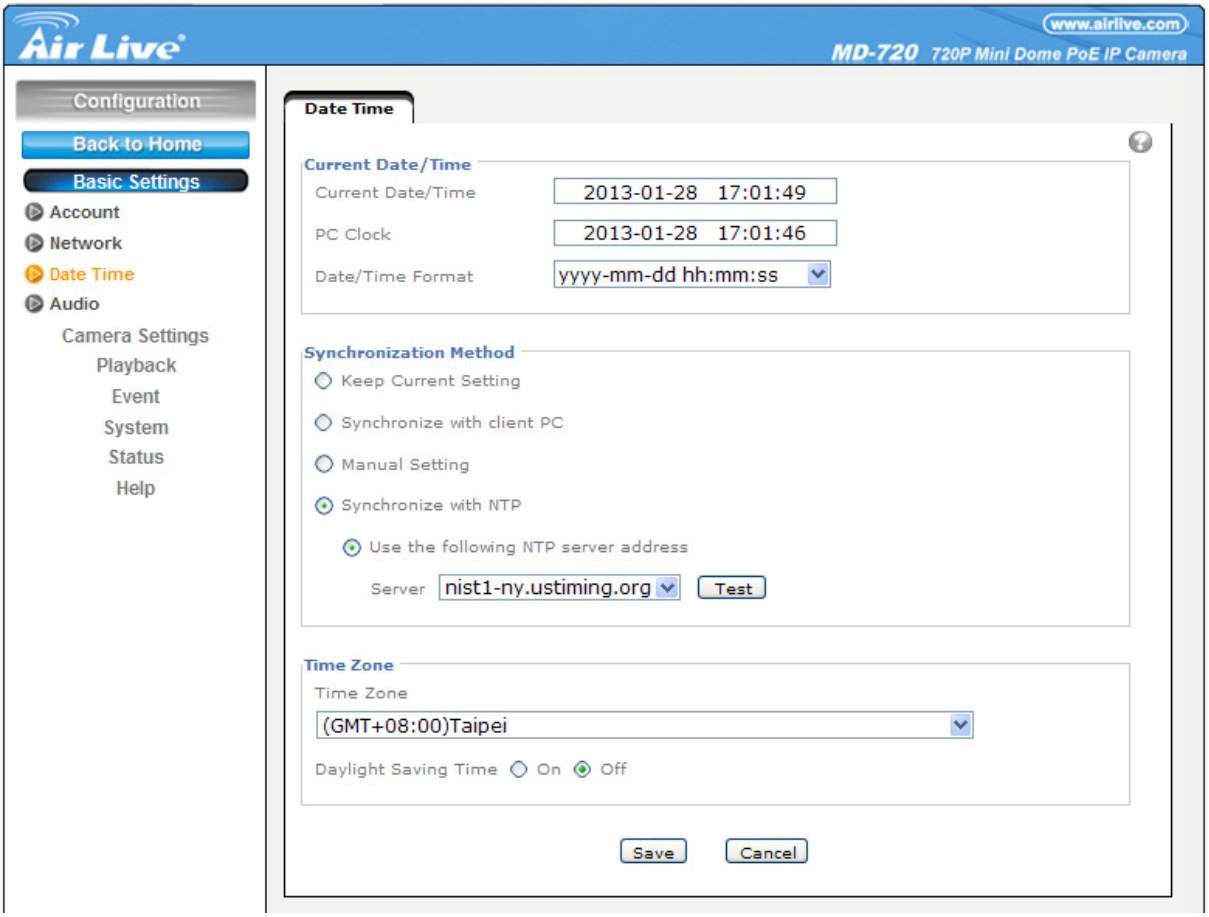
1. PPPoE (Point-to-Point Protocol over Ethernet): PPPoE is a network protocol for encapsulating Point-to-Point Protocol frames insider Ethernet frames. PPPoE connection is used mainly with ADSL service where individual users connect to the ADSL transceiver (modem) over Ethernet work. It also widely used in XDSL (digital affiliate line such as ADSL, VDSL or SDSL)

2. Reboot the IP Camera after the network setting has been made.

3. The IP Camera with Intelligent IP Installer can't be founded after turning on the PPPoE and reboot.

6.3 Date Time

The **Date/ Time screen** displays all options of time setting.



- Current Date / Time

It displays current time and date of IP Camera and PC that you connected, and you may select the Date/Time format as you wish in the drop-down menu.

Note: If you would like the Date / Time information shows on the Live View screen, please check "Camera Setting →Video →Overlay → Time Stamp" and save the setting.

- Synchronization Method

Keep current setting: Select this mode to keep the current date and time of this IP Camera.

Synchronize with Client PC: Select this mode to keep the date and time of this IP Camera same as the monitoring PC.

Manual setting: Select this mode to adjust manually the date and time of this IP Camera.

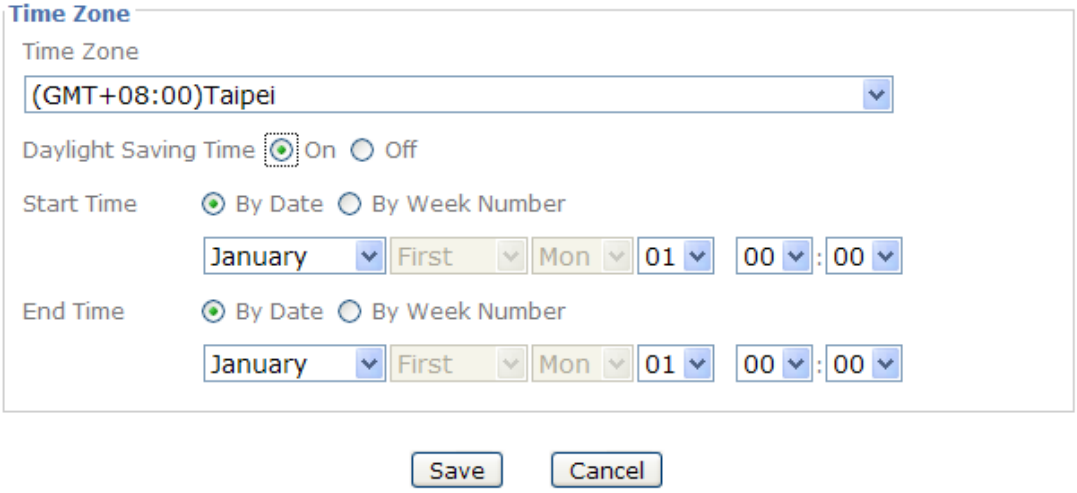
Synchronize with NTP: Specify the NTP server name and click “Update now” to synchronize the date and time of this IP Camera with those of the time server, known as the NTP server.

- Time Zone

Time Zone: Select the Time Zone format of Greenwich Mean Time among different cities. The time display will be the same as the current date / time option.

Daylight Saving Time: There are two modes to choose for setting up daylight saving time.

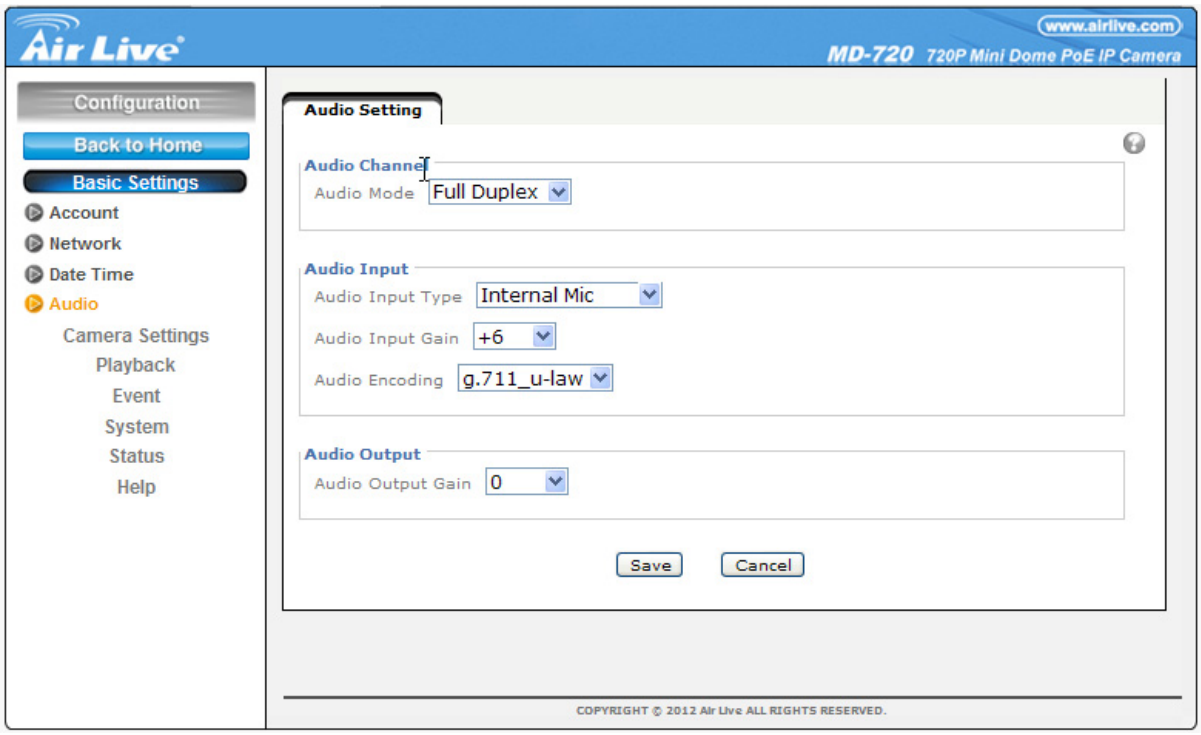
- By Date: Set the start and end time by select month, day, hour, and minute.
- By Week Number: Set the start and end time by select month, week, hour, and minute.



Note: The NTP server (Network Time Protocol) is the time server which is an Internet standard protocol built on the top of TCP / IP. This assures accurate synchronization to the millisecond of computer clock times in a network of computers.

6.4 Audio

The **Audio screen** displays all options of audio setting.



Audio Channel

- **Full duplex:** Select it for simultaneous communication in both direction between the connected administrator and IP CAM. It means both parties can speak and be heard at the same time.
- **Half duplex:** Select it for communication in both directions, but only one direction at a time. It cannot receive signal until the transmission has been done. Therefore, once one party speaks but can't hear the voice, and vice versa.
- **Talk only:** It narrows down to one way just for talking.
- **Listen only**: It narrows down to one way just for listening.

Audio Input

Select the microphone input gain value you wish in the drop-down menu, and based on your region to select the proper codec and save all settings.

- **G.711 U-law:** One codec for "Computer Audio", used in North America & Japan areas.
- **G.711 A-law**: another codec for "Computer Audio", used in Europe and the rest of the world.

- **AMR Audio**: An audio codec of the third generation communication for mobile phone. While the option selected, your mobile phone will receive the audio file from IP Camera. And you can choose the bit rate from 4.75k to 12.2k. However, the usage of this codec will cause frame-rate decreasing.
- **Off**: audio file won't be transmitted by IP CAM.

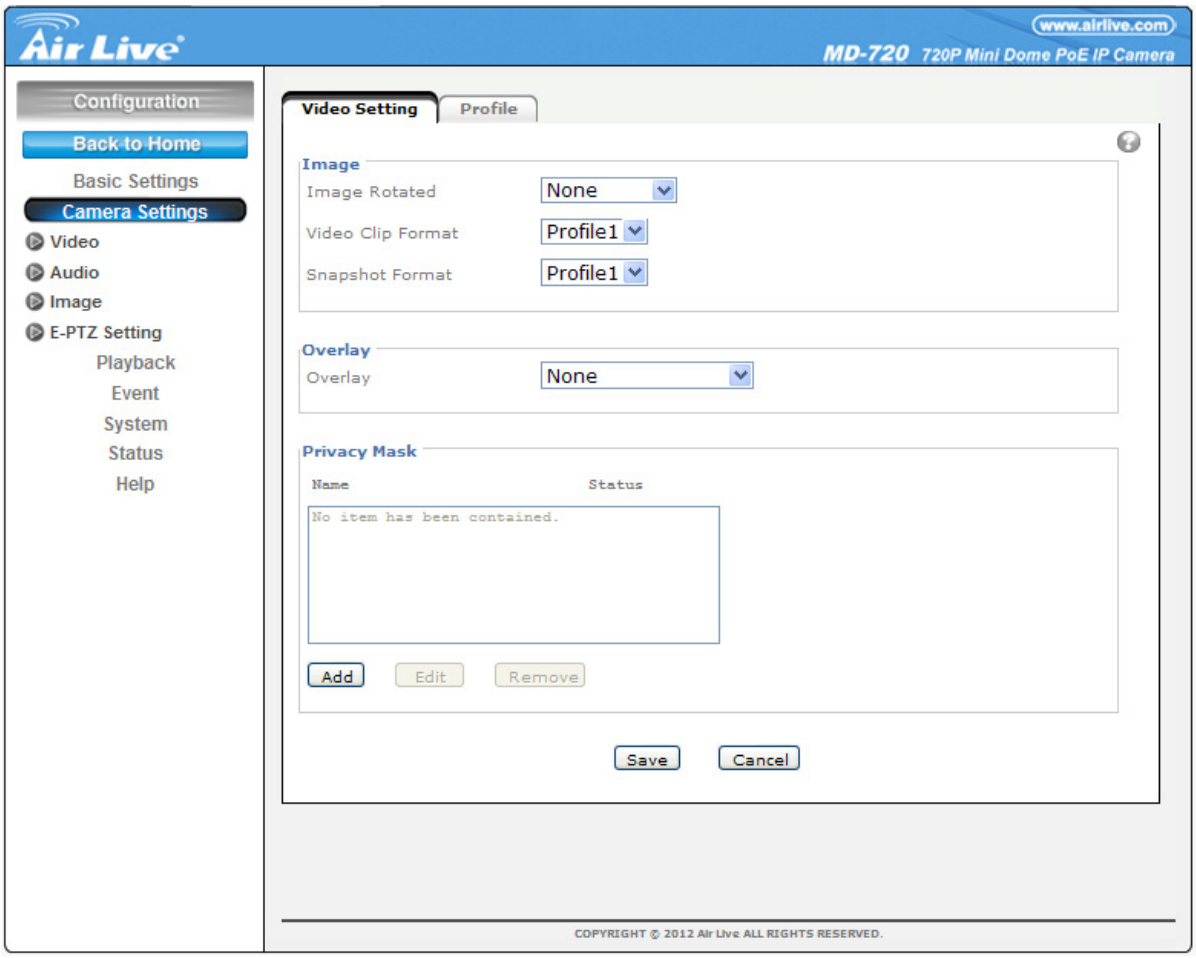
Audio Output

Select the speaker output gain value you wish in the drop-down menu and save it.

Note: The Camera does not support echo cancelling; using the full duplex mode may cause audio feedback.

7 Camera Setting

Click the **Camera Setting** to display the sub-menus including **Video, Audio, Image** and **E-PTZ Setting**.



7.1 Video

1. Video Setting

- Image

Image Rotated: Select the screen display of “flip”, “mirror”, or “flip + mirror.

Video clip format: Select **RECORDING compression format** of H.264、MPEG-4、and MJPEG.

- Profile1 (H.264): H.264 provides higher compression rate than MPEG-4. Thus, H.264 can decrease the bandwidth usage and further apply on 3G. However, H.264 will occupy more system resources than MPEG-4. As long as the operating system appears operating difficulties under H.264 format, please change to select MPEG-4.
- Profile2 (MPEG-4): MPEG-4 has the advantage of sending a lower volume of date per time unit across the network (bit-rate) compared to Motion JPEG and therefore provides a relatively high image quality at a lower bit-rate (bandwidth usage).
- Profile3 (MJPEG): Motion JPEG stream uses considerable amounts of bandwidth, but provides excellent image quality and access to every image contained in the stream.

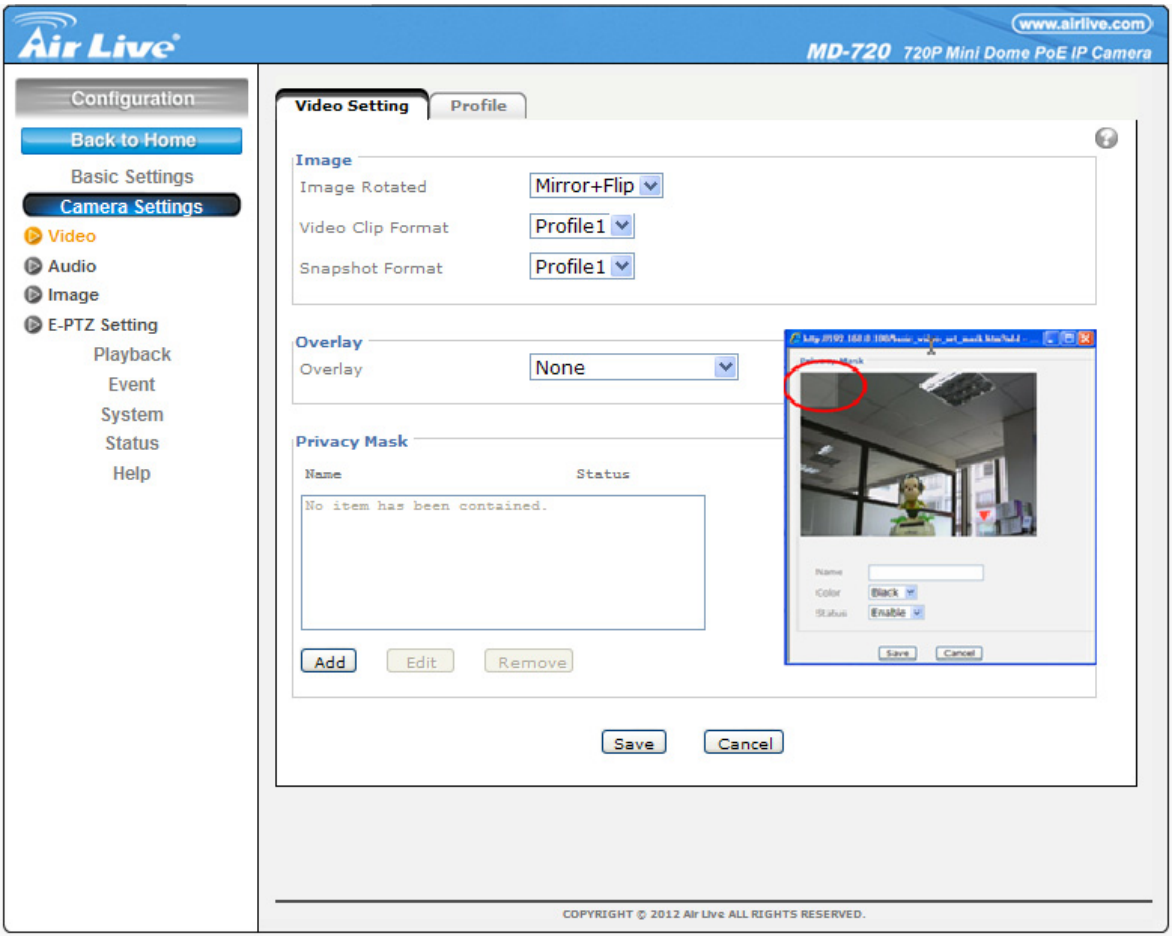
- Overlay

Text information can be showed on the display screen, such as Date / Time and the user-defined title.

- Privacy Mask

Privacy Mask is an area of solid color that bans users from viewing part of monitored area.

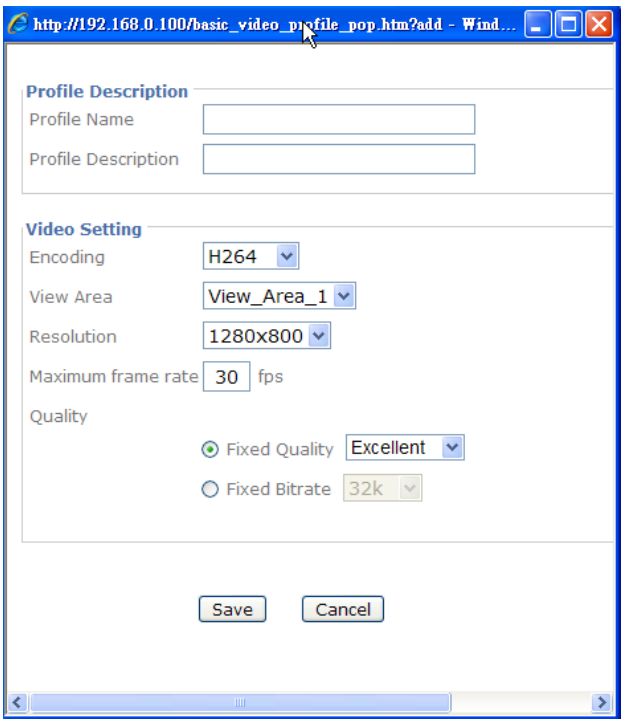
Click “Add” and a setting pop-up window come out. A translucent rectangle is located at up left of the image, drag it to where you wish to cover and resize it. Enter a descriptive name, select the color and enable it then save.



2. Profile

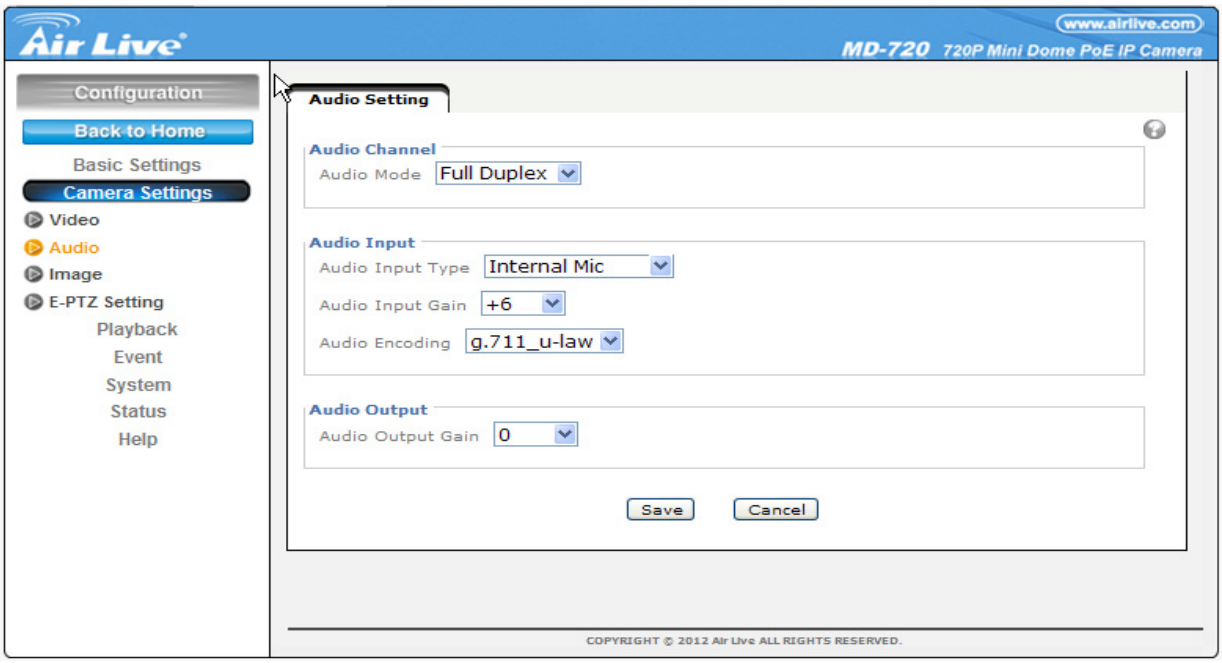
There are five stream profiles available for quick set-up. These settings can be adjusted and new customized profiles can be created. Each profile has a descriptive name, describing its usage and/or purpose. The profiles can be selected from the Live View page.

- Create a new stream profile: Click “Add” and a setting pop-up window comes out,
- Edit the stream profile: Click the profile you appoint to modify and click “Edit” to do the further setting.



7.2 Audio

The **Audio screen** displays all options of audio setting



Audio Channel

- Full duplex: Select it for simultaneous communication in both direction between the connected administrator and IP CAM. It means both parties can speak and be heard at the same time.

- Half duplex: Select it for communication in both directions, but only one direction at a time. It cannot receive signal until the transmission has been done. Therefore, once one party speaks but can't hear the voice, and vice versa.

- Talk only: It narrows down to one way just for talking.

- Listen only: It narrows down to one way just for listening.

Audio Input

Select the microphone input gain value you wish in the drop-down menu, and based on your region to select the proper codec and save all settings.

- G.711 U-law: one codec for "Computer Audio", used in North America & Japan areas.

- G.711 A-law: another codec for "Computer Audio", used in Europe and the rest of the world.

- AMR Audio: an audio codec of the third generation communication for mobile phone. While the option selected, your mobile phone will receive the audio file from IP Camera. And you can choose the bit rate from 4.75k to 12.2k. However, the usage of this codec will cause frame-rate decreasing.

- Off: audio file won't be transmitted by IP CAM.

Audio Output

Select the speaker output gain value you wish in the drop-down menu and save it.

Note: The Camera does not support echo cancelling; using the full duplex mode may cause audio feedback.

7.3 Image

1. Image Settings

- Image Enhancement

- **Brightness:** The image brightness can be adjusted in the range 0-100. A higher value produces a brighter image.
- **Saturation:** Adjust the saturation in the range 0-100. The higher value gets more colorful image.
- **Contrast:** Adjust the image's contrast by raising or lowering the value in the range 0-100.

- **Sharpness:** Control the sharpness applied to the image in the range 0-100. A sharper image might increase image noise especially in low light conditions. A lower setting reduces image noise, but the image would be less sharp.

- White Balance

- **Color Tone:** There are 3 optional color tones (cool, real and warm). It depends on individual preference to select.
- **Auto White Balance:** This is used to adjust for the different colors present in different light sources, to make the colors in the image appear the same. The IP camera can be set to automatically identify the light source and compensate for its color. Alternatively, the type of light source can be manually selected from the drop-down menu.

- Exposure Setting

- **Exposure Frequency**: The default setting of lighting environment is **Auto**. However, you may select **50** or **60** Hz upon the lighting environment of your country. The **hold current** option fixes the current exposure settings
- **Automatic exposure**: You can manually set the exposure value, which ranges from 0-100(dark to bright). The default value is 25.
- **Exposure time**: Select a proper exposure time according to the light source of the surroundings. The exposure times are selectable as the following durations: 1/120second, 1/60 second, 1/30 second, 1/12 second, 1/6 second, 1/3 second, and 1second. Shorter exposure time brings less light.
- **Gain**: Accord to the surroundings in the low light and make the range among 1-64. The higher value makes brighter image; however it brings more noise at the same time.
- **Low light behavior**: This is the operation aiming at low light and night mode. According to the surroundings you can manually set the preferable settings different from the regular “Exposure Settings”. Nevertheless, the low light behavior can be scheduled up by **working day**, **weekend**, and **night mode** as user’s preference.
- **Backlight Compensation**: It makes the object display clearly when the image background is too bright or the object is too dark.

- Wide Dynamic Range

Enable **Wide Dynamic Range** auto in different level to improve the exposure when both bright and dark areas simultaneously in the field of view of the camera. The level goes from 1-8, the larger number brings stronger influence. Note the default is off.

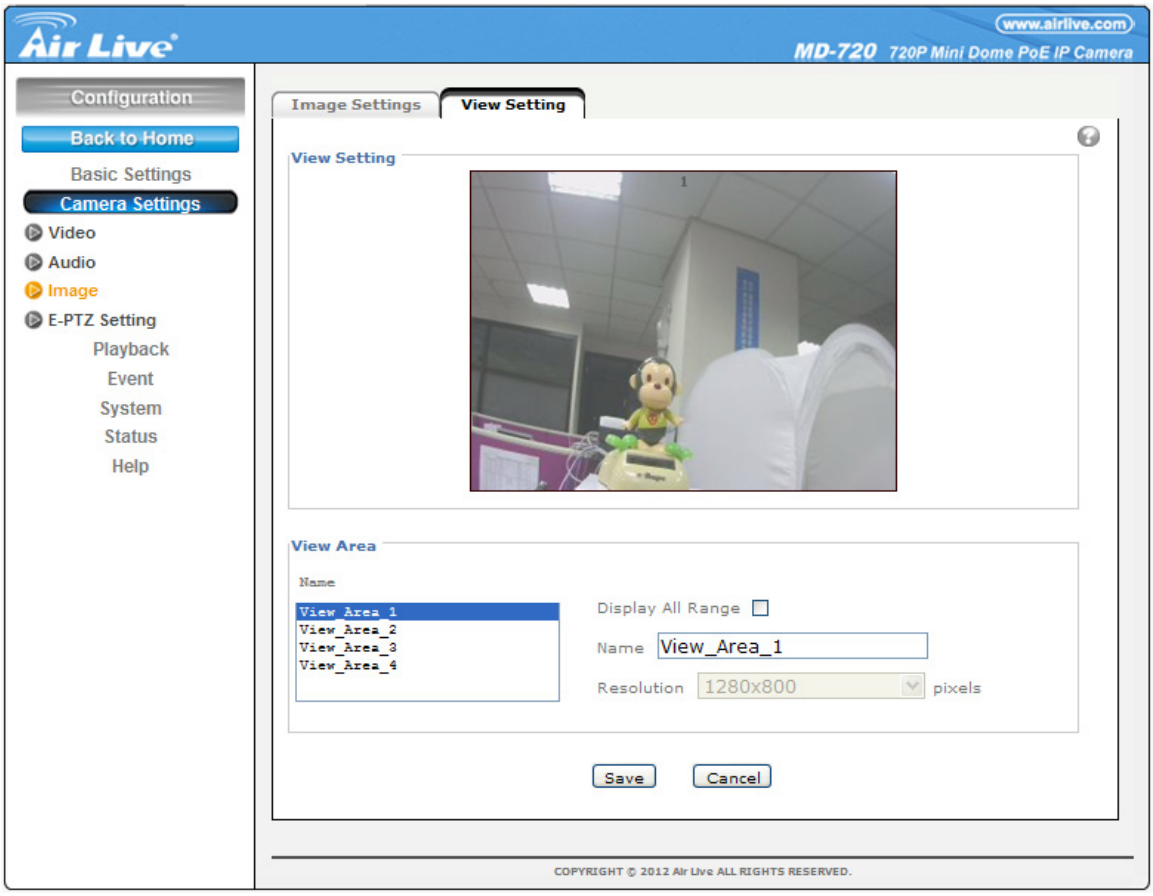
- Noise Reduction

Select the period you wish the noise reduction being executed in the drop-down menu, there are **working day**, **weekend**, and **night** modes**.**

2. View Setting

A view area is a cropped part of the overview image. Each view area is treated as a video source in Live View with its own Video Stream, PTZ and Event settings. There are 4 areas can be presented and 6 various resolutions for each view area.

Note: Except the View Area1 has been fixed to be full resolution, the rest of the three are available to be set to resolution you wish in the drop-down menu.



7.4 E-PTZ Setting

1. Patrol Setting

- Control Panel

The control panel can be set up the selected view area in every profile. Besides the viewing window, there is a PTZ control panel to go to the direction you want.

Note: Before operating this function, you must set the resolution beneath 1920x1080, and move your view area to your desired position.

- Preset Position

Name your every position and click “add”. You can click “go” to make sure if the preset position has been written in.

- Guard Tour

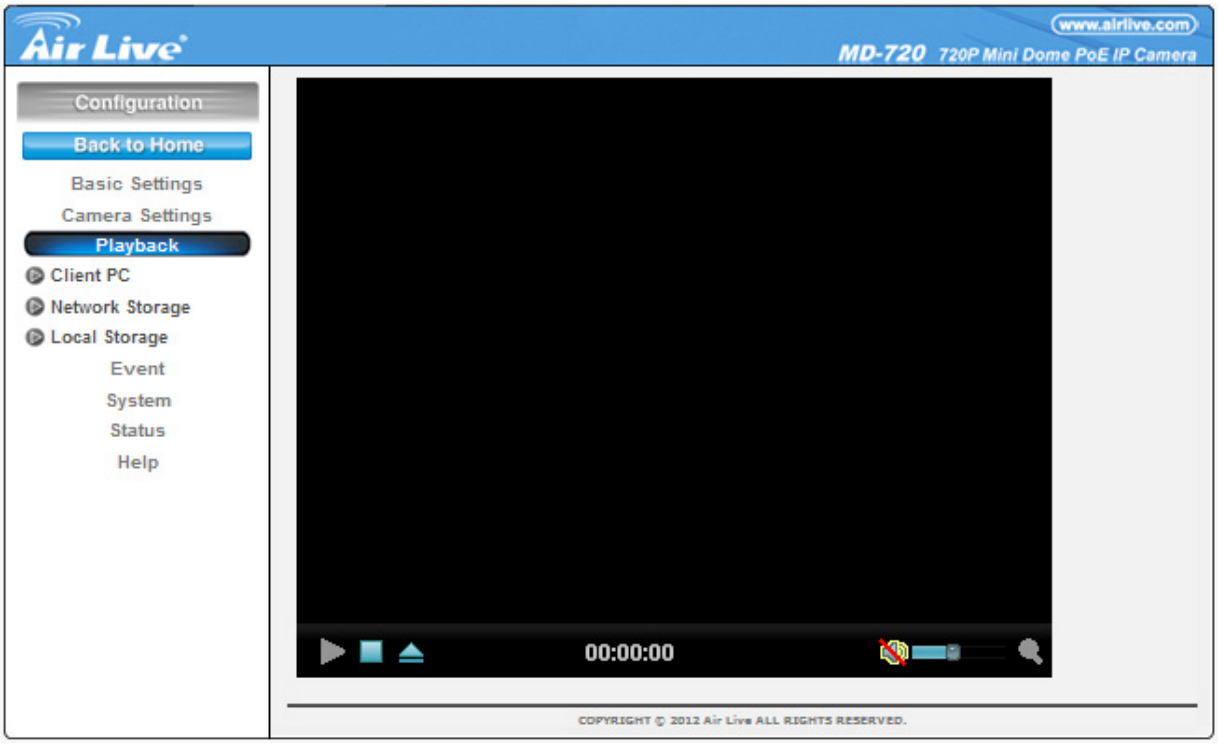
Click “add”. Name the tour first, and then add in the preset position you desired to form the tour. You can manually set the PTZ speed and the interval time.

2. PTZ Control

You may set the speed of digital Pan/Tilt/Auto Pan. The range goes 1-100 (slow to fast).

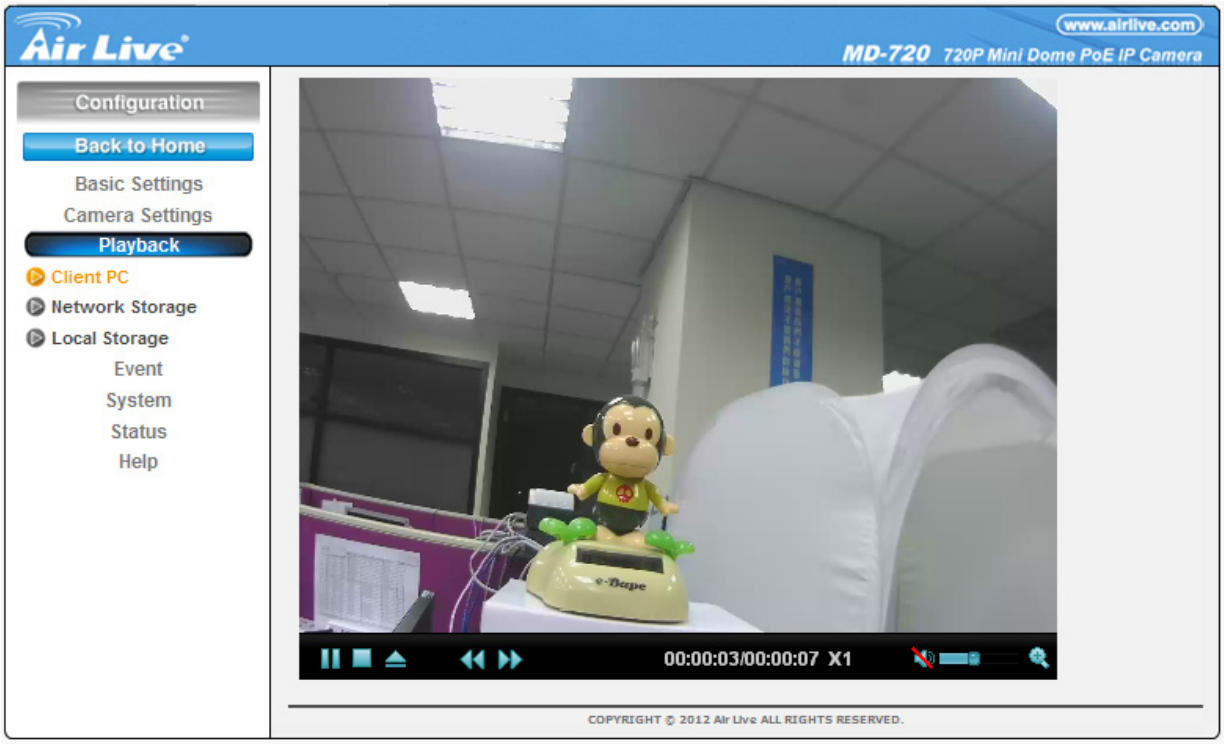
8 Playback

Click the **Playback** to display the sub-menus including **Client PC, Network Storage** and **Local Storage**.



8.1 Client PC

This is for uploading the recorded file saved in the PC and play back to see the video.



❸❷❶ ❹❺ ❻ ❼ ❽ ❾ ❿

❶	Click it to upload the recorded file in the PC.
❷	Click it to stop the current video.
❸	Click it to pause the playing video.
❹	Click it to slow down the playing speed.
❺	Click it to speed up the playing speed.
❻	It displays the current playing video length.
❼	It displays the whole video length.
❽	It displays the current video speed.
❾	Click it to adjust the volume of video and mute.
❿	Click it to make digital zoom.

8.2 Network Storage

The network storage provides the storage function for saving image files to the specified computer and folder connected with the operating computer.
Before using this function you must go to Event Server in Event (Chapter 10) to configure all settings and make the recording file saved here.

8.3 Local Storage

The memory card provides local storage function for saving image files to the specified SD card in your camera. This function can be enabled only when you insert SD card to the camera and the SD/SDHC card works well.
Before using this function you must go to SD card in Event (Chapter 10) to configure all settings and make the recording file saved here.

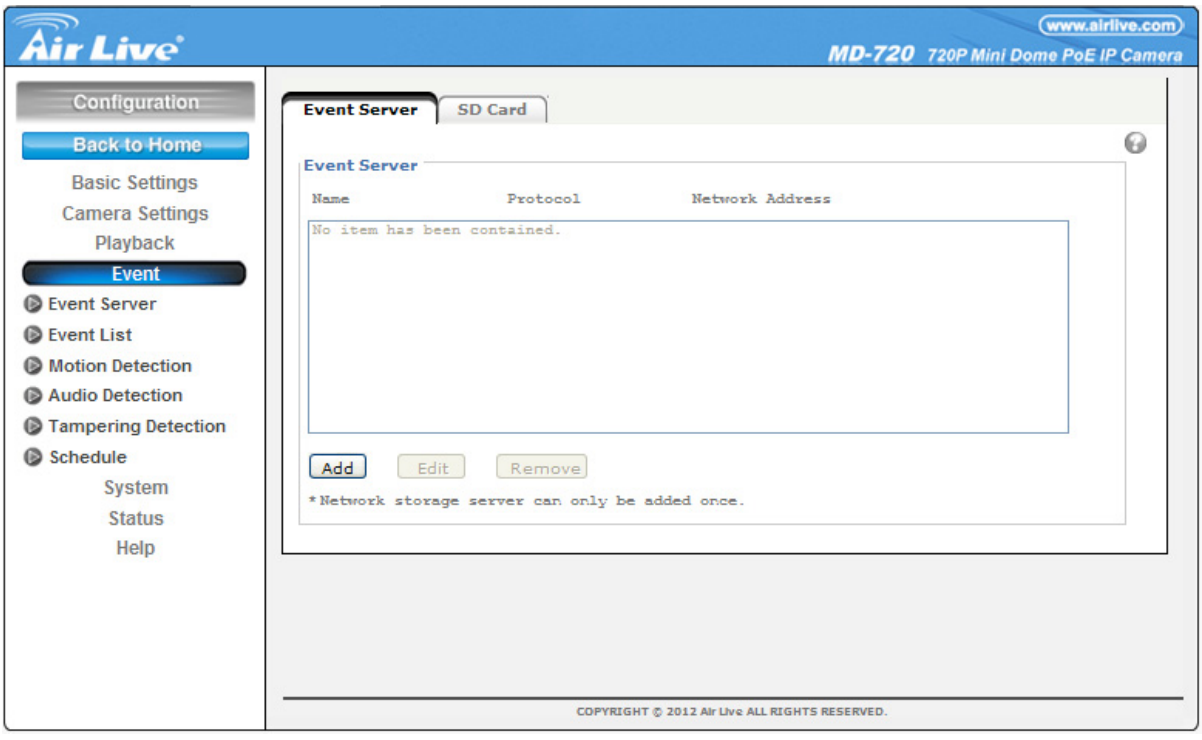
9 Event

Click the **Event** to display the sub-menus including **Event Server, Event List, motion Detection, Audio Detection, Tampering Detection** and **Schedule**.

9.1 Event Server

1. Event Server

Click “Add” to create an event server; then the setting page pops up. Name it; select your network type put on the storage location. This is optional to create the password for certain group to use it. Then click the “Test” button to see if it works. It will show the information on the pop-up window to see your setting if it has been made successfully. There are 3 types of event transmission offered to select. There is a range 0~7 seconds can be selected individually for pre-event and post-event. There are 3 suffix options for naming image file by **Name**, **Date Time** and **Sequential Number.**



2. SD Card

Make sure to insert the SD Card first then click “on”. Create a folder name for event server in SD Card. There is optional selection for overwrite the previous file or not. If not, you may set a warning when the capacity is below the following percentage: 5%, 10%, 25% and 50%.

9.2 Event List

1. Event List

- General

Name the event file and make it on or off.

- Trigger

You may activate the following trigger types as you wish depended on various conditions:

- **Motion Detection**: Click it on for using Motion Detection function as a sensor. You must configure motion detection function before taking this as the trigger. Set minimum time interval between 2 triggers, and choose the desired detection area. The detection type individually stands for the following meanings:
  Start: The trigger would be activated when the target object starts to move.
  Stop: The trigger would be activated when the target object stops to move.
  Start-Stop: The trigger would be activated during the target object starts to move till it stops.
- **Audio Detection**: Click it on for using Audio Detection function as a sensor. You must configure audio detection function before taking this as the trigger. Set minimum time interval between 2 triggers. The detection type stands for the following meanings individually:
  Start: The trigger would be activated when the sound is made.
  Stop: The trigger would be activated when the sound is cut off.
  Start-Stop: The trigger would be activated during the sound is made and cut off.
- **Periodical:** This condition can be set during the certain period (by minute) to start the trigger.
- **On boot**: The event is triggered when the IP Camera has been started over.
- **Capacity Warning**: This is triggered when SD Card capacity is be below the value you set.
- **Network Link Down**: The event is triggered when the network gets disconnected.

- **IP Notification**: The event is triggered when the network being restarted or the IP being changed. There are optional network types to select, such as **DHCP**、**Static IP** and **PPPoE.**

- Action

There are multiple choices for action taking which is optional for a user to select all of them or part of them: **Send Image**、**Send Notification**、**PTZ Action** or **Night Mode.**

- **Send Image:** You may set up where the image sent to, options like event server and SD card. You must configure it first. Please refer to **Event Server (Chapter 9.1)**.
- **Send Notification:** First go to HTTP server, and than configure the HTTP server URL, port, User ID, Password, and Proxy server settings.
  Note: The setting of URL should be same as CGI.
- **PTZ Action:** First configure the PTZ to set up the preset positions and tour you desired. You may select to return to the last position after the event being triggered.
- **Night Mode:** You may set up this action being activated continually while the event triggered or continually every period (by second) interval.
  Note: Only Motion Detection excludes Night Mode.

- Schedule

You may set up the event schedule as “always” or scheduled by working day, weekend or night mode. You must configure schedule before using it.

2. Scheduled Recording

- General

Name the recording file and make it on or off.

- Action

- **File Size:** You can manually write in the file size as the suggested range.
- **Cyclic Size**: You can manually write in the cyclic size as the suggested range.

- Schedule

You may set up the event schedule as “always” or scheduled by working day, weekend or night mode. You must configure schedule before using it.

9.3 Motion Detection

Add the motion detection zone and name it. You can adjust the zone of detection with the mouse. Maximum 10 detection zone can be set. The bar on the top of motion detection area is red when the alarm is triggered.

- **Threshold:** Set the threshold of the alarm in the motion detection zone. The higher threshold is; the lesser detections can be triggered.
- **Sensitivity:** Set the sensitivity for motion detection zone. The higher sensitivity is; the more sensitive it gets.

9.4 Audio Detection

Select “on” if you want to activate the audio detection. The bar on the top of motion detection area is red when alarm is triggered.

Threshold: Set alarm threshold for audio detection. The higher threshold is, the lesser detections can be triggered.

Sensitivity: Set alarm sensitivity for audio detection. The higher sensitivity is, the more sensitive it gets.

9.5 Tampering Detection

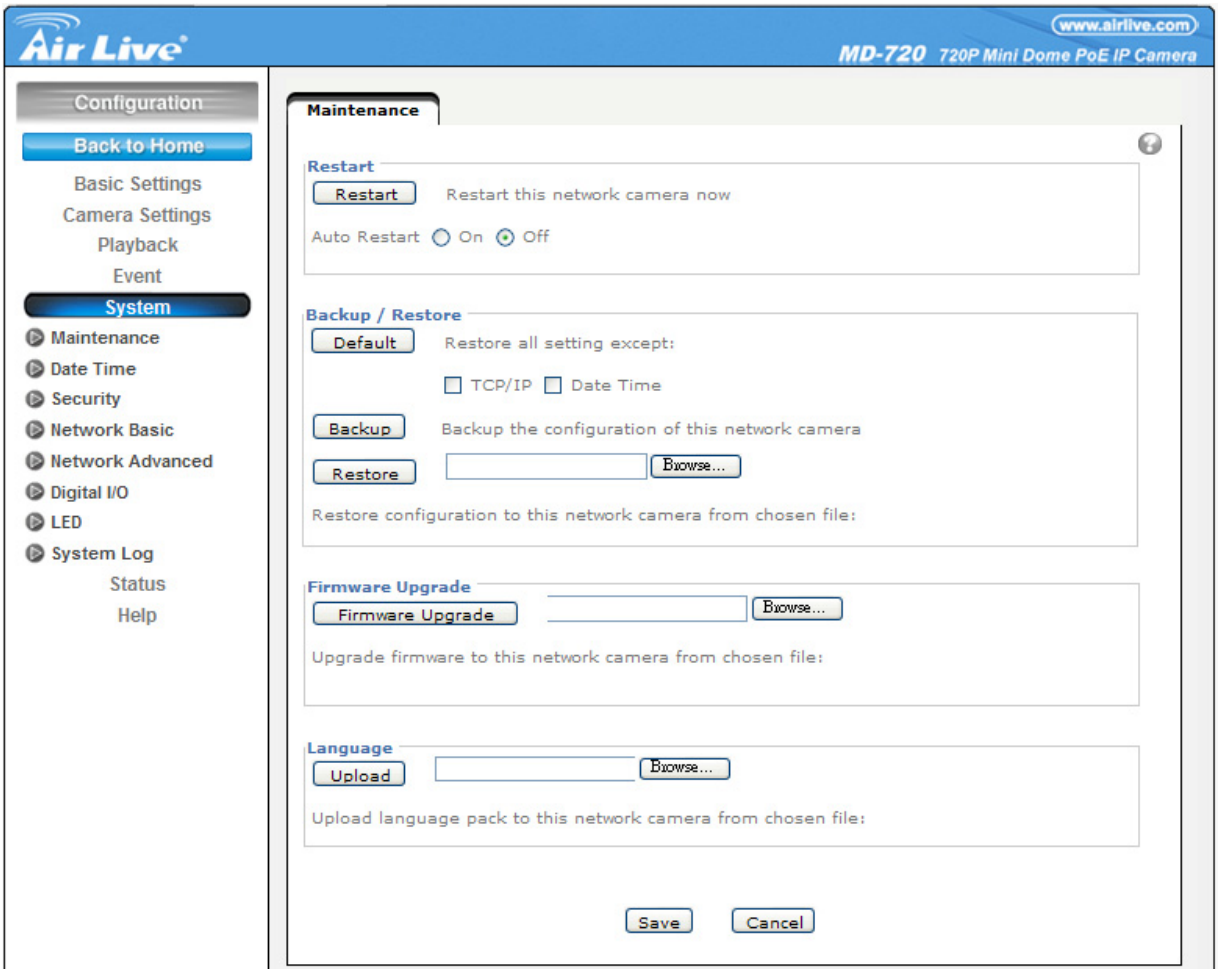
Select “on”, if you want to activate the tempering detection.
Trigger Duration: This setting is set for the trigger started for the duration of tampering lasting you configure. The duration range is from 5 seconds to 900 seconds.

9.6 Schedule

The schedule is made for **Event List** to set the recording period. There are already 3 modes (**Working Day**、**Weekend** and **Night Mode**) has been set for a user. 7 more modes are available to set manually.

10 System

Click the **System** to display the sub-menus including **Maintenance, Date Time, Security, Network Basic, Network Advanced, Digital I/O, LED** and **System Log**.



10.1 Maintenance

- Restart

Restart button is for reboot the IP Camera digitally. You may reboot the camera manually or automatically.

Click “on” and shown two modes for a user to reboot the camera automatically.

- **Sequential Mode** offers the selection that how many days you would like to reboot, 7 days at most.
- **Schedule Mode** is able to select the certain day and time to reboot.

- Backup / Restore

Default: Click this button to recover this IP Camera to the factory default setting. A confirmation dialogue will appear and then click “OK” to execute. The network indicator on this IP Camera will start to blink. This IP Camera will reboot automatically after completing adjustments to the default setting. Don't turn off this IP Camera until the device reboots. Furthermore, the **IP** and **Date Time** that are already set up can be fixed.

Backup: You can save the setting data of this IP Camera into a file. Click “Save” and follow the instructions on the browser to save the setting data file to the location you specified.

Restore: Download the saved setting data of this IP Camera. Click “Browse” and select saved file. Click “OK” and this IP Camera is adjusted according to the loaded data and then restarted.

- Firmware Upgrade

Update the device software. Click “Browse” and select the file for updating. A confirmation dialogue will appear. Click “OK” to start. This IP Camera will reboot upon completion.

- Upload Language Pack:

Clicking “Browse” and selecting the file for updating. The present language display of web user Interface can be changed. A confirmation dialogue will appear. Click “OK”; then the update will be applied immediately. The default language is “English.”

Note: You might find the Language Pack in the bundle CD.

10.2 Date Time

Please refer to Chapter 6.3.

10.3 Security

1. Account

Please refer to Chapter 6.1.

2. IP Address Filter

Once it was enabled, the listed IP address are allowed or denied access to the product. Add the IP Address that you'd like to allow or deny, and select allow or deny from the list and save it.

3. HTTPS

HTTPS is a URL scheme used to indicate a secure HTTP connection. It is syntactically identical to the http:// scheme normally used for accessing resources using HTTP. Use an https: //URL/ with a different default TCP port (443) and an additional encryption / authentication layer between the HTTP and TCP. You can use the IP camera through HTTPS easily by using https:// instead of http://.

- **Create & Install:** Create a self-signed certificate for HTTPS to recognize.
- **Installed Certificate**: Display or remove the properties of the installed certificate.
- **HTTPS Connection Policy**: Set HTTPS connection policy for different level of users.

To use the HTTPS encryption, please set up "**Create self-signed certificate**" for the first time you use the HTTPS function, and then set up the connection policy for different users.

Note: When HTTPS with RTSP is enabled the "on" mode, the IP Camera only protect the setting such as username and password, and do not protect video and audio. When HTTPS with RTSP is enabled the "off" mode, the IP Camera will protect all setting including video and audio.

10.4 Network Basic

Please refer to Chapter 6.2.

10.5 Network Advanced

1. RTSP

- General

- **RTP Port Range:** The default value of port range is 5000 ~ 7999 and it can be changed from 1124 to 65534.
- **RTSP Port:** The default value is 554. If the IP Cameras are connected with router and installed outside over 2 sets, all of them are need support RTSP. Please fill the value in the blank space in the range from 1124 to 65534.
-

- **RTSP Configuration:** Configure the RTSP by profile, and then enable or disable the authentication.

- Multicast

- **Status:** This can enabled or disabled the multicast.
- **Access Name:** This will be shown and changed along with the profile you select.
- **Multicast Address:** Specify the multicast server address.
- **Video / Audio Port:** Specify the transmission port number of the video data from 1124 to 65534.
- **Time to Live:** Set the maximum TTL that multicast can pass through. The default value is 15.

2. UPnP

If you have a router to access to internet and the router supports UPnP IGD function, you need to turn on the UPnP Port Forwarding function.

- **HTTP port:** Enter the HTTP port number and default HTTP port is 80.
- **SSL port:** Enter the SSL port number and default SSL port is 443.
- **RTSP port:** Enter the RTSP port, default value is 554 for computer view.

Note: UPnP (Universal Plug and Play): UPnP is a set of computer network protocol. It allows devices to connect seamlessly and simplify the implementation of networks in the home and corporate environments.

3. Bonjour

Bonjour, also known as zero-configuration networking, enables automatic discovery of computers, devices, and services on IP networks. Bonjour uses industry standard IP protocols to allow devices to automatically discover each other without the need to enter IP addresses or configure DNS servers.

- **Device Name:** Enter Device Name you wish.

Note: How to use Bonjour in your Windows Browser UI? Please check the link below: http://www.apple.com/support/downloads/bonjourforwindows.html

4. DDNS

DDNS is a system which allows the domain name data held in a name server to be updated in real time. The most common use for DDNS is allowing an internet domain name to be assigned to a computer with a varying / dynamic IP Address. It is possible to make other sites on the internet establishing connection to the machine without needing to track the IP Address themselves.

- **Server name:** Choose the DDNS Server from the list.

- **A user ID**: Enter the user ID for authentication necessary for DDNS connections. Type it up to 64 characters.
- **Password**: Enter the password for authentication necessary for DDNS connections. Type it up to 32 characters.
- **Re-type password**: Re-type the password to confirm.
- **Host name**: Enter the host name that is registered to the DDNS server.
- **Periodical Update**: Update your DDNS information periodically.

10.6 LED

This is optional for a user to select wheatear the LED indicator is shown or not, as the IP Camera is turned on. What benefit it gets when LED off is it's not easily to be aware when somebody sneak in the space where the camera installed, especially at the darkness.

10.7 System Log

Enable the remote log to let the log being saved in the remote server, in case that the camera being cut down.
Put on the server name and select the sever port and save it.

11 Appendix

A. Frame-rate and Bitrate Table

This section helps you to set the IP Camera with your network environment to access Internet, basing on your network upload environment to choose the suitable Image-Quality setting. For example, if the network environment is ADSL 256Kb (upload) / 2Mb (download), the most fluent Image-Quality needs to set up under 256 Kb situation.

A.1 CMOS Mega Model

A.1.1 H.264 @ 15fps / kbps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	**2800**	**1900**	**300**	**90**
Detailed	**1700**	**1300**	**200**	**75**
Good	**1300**	**900**	**170**	**60**
Standard	**800**	**600**	**150**	**55**
Medium	**600**	**450**	**130**	**45**

A.1.2 H.264 @ 10fps / kbps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	**1900**	**1400**	**250**	**70**
Detailed	**1200**	**900**	**180**	**60**
Good	**900**	**650**	**160**	**55**
Standard	**650**	**450**	**130**	**50**
Medium	**450**	**350**	**120**	**40**

A.1.3 H.264 / kbps, fps

Image-Size	Bitrate Setting	Frame-Rate Setting	Current Bitrate	Current Frame-Rate
1280*1024	6144	15	**6300**	**15**
1280*1024	6144	10	**6300**	**10**
1280*1024	2048	15	**2200**	**15**
1280*1024	2048	10	**2200**	**10**
1280*1024	512	15	**550**	**15**
1280*1024	512	10	**550**	**10**
1280*720	6144	15	**6300**	**15**
1280*720	6144	10	**6300**	**10**
1280*720	2048	15	**2200**	**15**

1280*720	2048	10	**2200**	**10**
1280*720	512	15	**550**	**15**
1280*720	512	10	**550**	**10**
640*480	6144	15	**6300**	**15**
640*480	6144	10	**6300**	**10**
640*480	2048	15	**2200**	**15**
640*480	2048	10	**2200**	**10**
640*480	512	15	**550**	**15**
640*480	512	10	**550**	**16**
320*240	6144	15	**5100**	**15**
320*240	6144	10	**3600**	**10**
320*240	2048	15	**2200**	**15**
320*240	2048	10	**2200**	**10**
320*240	512	15	**550**	**15**
320*240	512	10	**550**	**10**

A.1.4 MPEG 4@ 15fps / kbps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	**3800**	**3000**	**600**	**130**
Detailed	**2900**	**2200**	**450**	**110**
Good	**1800**	**1400**	**300**	**90**
Standard	**1200**	**900**	**250**	**70**
Medium	**900**	**600**	**200**	**60**

A.1.5 MPEG4@ 10fps / kbps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	**3000**	**2300**	**500**	**110**
Detailed	**2200**	**1600**	**400**	**100**
Good	**1400**	**1100**	**250**	**80**
Standard	**950**	**700**	**200**	**65**
Medium	**700**	**550**	**180**	**50**

A.1.6 MPEG4 / kbps, fps

Image-Size	Quality Setting	Frame-Rate Setting	Current Bitrate	Current Frame-Rate
1280*1024	6144	15	**5200**	**12**
1280*1024	6144	10	**6300**	**10**
1280*1024	2048	15	**2200**	**15**
1280*1024	2048	10	**2200**	**10**
1280*1024	512	15	**550**	**15**
1280*1024	512	10	**550**	**10**
1280*720	6144	15	**6300**	**15**
1280*720	6144	10	**6300**	**10**
1280*720	2048	15	**2200**	**15**

1280*720	2048	10	**2200**	**10**
1280*720	512	15	**550**	**15**
1280*720	512	10	**550**	**10**
640*480	6144	15	**6300**	**15**
640*480	6144	10	**6300**	**10**
640*480	2048	15	**2200**	**15**
640*480	2048	10	**2200**	**10**
640*480	512	15	**550**	**15**
640*480	512	10	**550**	**10**
320*240	6144	15	**2200**	**15**
320*240	6144	10	**1800**	**10**
320*240	2048	15	**2200**	**15**
320*240	2048	10	**1800**	**10**
320*240	512	15	**550**	**15**
320*240	512	10	**550**	**10**

A.1.7 MJPEG @ 15fps / kbps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	**17500**	**16000**	**7800**	**2600**
Detailed	**12000**	**9500**	**4000**	**1500**
Good	**10000**	**6800**	**2900**	**1100**
Standard	**7000**	**5100**	**2200**	**800**
Medium	**4300**	**3200**	**1400**	**500**

A.1.8 MJPEG@ 10fps / kbps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	**16000**	**14500**	**5500**	**1700**
Detailed	**9000**	**6500**	**2700**	**1000**
Good	**6500**	**4700**	**2000**	**800**
Standard	**4700**	**3500**	**1500**	**600**
Medium	**2800**	**2200**	**1000**	**350**

A.1.9 MJPEG / kbps, fps

Image-Size	Quality Setting	Frame-Rate Setting	Current Bitrate	Current Frame-Rate
1280*1024	Excellent	15	**17500**	**8**
1280*1024	Excellent	10	**16000**	**8**
1280*1024	Good	15	**10000**	**15**
1280*1024	Good	10	**6500**	**10**
1280*1024	Medium	15	**4300**	**15**
1280*1024	Medium	10	**2800**	**10**
1280*720	Excellent	15	**16000**	**12**
1280*720	Excellent	10	**14500**	**10**
1280*720	Good	15	**6800**	**15**

1280*720	Good	10	**4700**	**10**
1280*720	Medium	15	**3200**	**15**
1280*720	Medium	10	**2200**	**10**
640*480	Excellent	15	**7800**	**15**
640*480	Excellent	10	**5500**	**10**
640*480	Good	15	**2900**	**15**
640*480	Good	10	**2000**	**10**
640*480	Medium	15	**1400**	**15**
640*480	Medium	10	**1000**	**10**
320*240	Excellent	15	**2600**	**15**
320*240	Excellent	10	**1700**	**10**
320*240	Good	15	**1100**	**15**
320*240	Good	10	**800**	**10**
320*240	Medium	15	**500**	**15**
320*240	Medium	10	**350**	**10**

A.2 VGA Model

A.2.1 H.264 @ 30fps / kbps

Quality	640*480	320*240
Excellent	**800**	**120**
Detailed	**450**	**100**
Good	**300**	**70**
Standard	**200**	**60**
Medium	**180**	**50**

A.2.2 H.264@15 fps / kbps

Quality	640*480	320*240
Excellent	**500**	**100**
Detailed	**300**	**80**
Good	**250**	**60**
Standard	**180**	**55**
Medium	**150**	**50**

A.2.3 H.264 / kbps, fps

Image-Size	Bitrate Setting	Frame-Rate Setting	Current Bitrate	Current Frame-Rate
640*480	6144	30	**6300**	**30**
640*480	6144	15	**6300**	**15**
640*480	2048	30	**2200**	**30**
640*480	2048	15	**2200**	**15**
640*480	512	30	**550**	**30**
640*480	512	15	**550**	**15**
320*240	6144	30	**6300**	**30**

320*240	6144	15	**5500**	**15**
320*240	2048	30	**2200**	**30**
320*240	2048	15	**2200**	**15**
320*240	512	30	**550**	**30**
320*240	512	15	**550**	**15**

A.2.4 MPEG4 @ 30fps / kbps

Quality	640*480	320*240
Excellent	**1400**	**250**
Detailed	**1000**	**160**
Good	**600**	**120**
Standard	**400**	**90**
Medium	**300**	**80**

A.2.5 MPEG4@ 15fps / kbps

Quality	640*480	320*240
Excellent	**900**	**180**
Detailed	**650**	**140**
Good	**450**	**100**
Standard	**300**	**80**
Medium	**200**	**70**

A.2.6 MPEG4 / kbps, fps

Image-Size	Bitrate Setting	Frame-Rate Setting	Current Bitrate	Current Frame-Rate
640*480	6144	30	**6300**	**30**
640*480	6144	15	**6300**	**15**
640*480	2048	30	**2200**	**30**
640*480	2048	15	**2200**	**15**
640*480	512	30	**550**	**30**
640*480	512	15	**550**	**15**
320*240	6144	30	**5100**	**30**
320*240	6144	15	**2800**	**15**
320*240	2048	30	**2200**	**30**
320*240	2048	15	**2200**	**15**
320*240	512	30	**550**	**30**
320*240	512	15	**550**	**15**

A.2.7. MJPEG @ 30fps / kbps

Quality	640*480	320*240
Excellent	**15000**	**5000**
Detailed	**7500**	**2800**
Good	**5500**	**2000**

Standard	**4200**	**1600**
Medium	**2600**	**1000**

A.2.8. MJPEG@ 15fps / kbps

Quality	640*480	320*240
Excellent	**7500**	**2600**
Detailed	**3800**	**1500**
Good	**2800**	**1200**
Standard	**2100**	**850**
Medium	**1400**	**500**

A.2.9. MJPEG / kbps, fps

Image-Size	Bitrate Setting	Frame-Rate Setting	Current Bitrate	Current Frame-Rate
640*480	Excellent	30	**15000**	**30**
640*480	Excellent	15	**7500**	**15**
640*480	Good	30	**5500**	**30**
640*480	Good	15	**2800**	**15**
640*480	Medium	30	**2600**	**30**
640*480	Medium	15	**1400**	**15**
320*240	Excellent	30	**5000**	**30**
320*240	Excellent	15	**2600**	**15**
320*240	Good	30	**2000**	**30**
320*240	Good	15	**1200**	**15**
320*240	Medium	30	**1000**	**30**
320*240	Medium	15	**500**	**15**

B. Storage Requirement Table

This section helps to set Recording Storage System.

Please refer to the following table to find out the capability for recording into your hard disk.

B.1 Mega Model

B.1.1. H.264 Storage Requirement GB / channel / day @ 15fps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	**232.4**	**157.7**	**24.9**	**7.5**
Detailed	**141.4**	**107.9**	**16.6**	**6.3**
Good	**107.9**	**74.7**	**14.2**	**5**
Standard	**66.4**	**49.8**	**12.5**	**4.6**
Medium	**49.8**	**37.4**	**10.8**	**3.8**

B.1.2. H.264 Storage Requirement GB / channel / day @ 10fps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	**157.7**	**116.2**	**20.8**	**5.9**
Detailed	**99.6**	**74.7**	**15**	**5**
Good	**74.7**	**54**	**13.3**	**4.7**
Standard	**54**	**37.4**	**10.8**	**4.2**
Medium	**37.4**	**29.1**	**10**	**3.4**

B.1.3. MPEG4 Storage Requirement GB / channel / day

Image-Size	Bitrate Setting	Frame-Rate Setting	Storage Requirement
1280*1024	6144	15	**522.9**
1280*1024	6144	10	**522.9**
1280*1024	2048	15	**182.6**
1280*1024	2048	10	**182.6**
1280*1024	512	15	**45.7**
1280*1024	512	10	**45.7**
1280*720	6144	15	**522.9**
1280*720	6144	10	**522.9**
1280*720	2048	15	**182.6**
1280*720	2048	10	**182.6**
1280*720	512	15	**45.7**
1280*720	512	10	**45.7**
640*480	6144	15	**522.9**
640*480	6144	10	**522.9**
640*480	2048	15	**182.6**
640*480	2048	10	**182.6**
640*480	512	15	**45.7**
640*480	512	10	**45.7**
320*240	6144	15	**423.3**
320*240	6144	10	**298.8**
320*240	2048	15	**182.6**
320*240	2048	10	**182.6**
320*240	512	15	**45.7**
320*240	512	10	**45.7**

B.1.4. MPEG4 Storage Requirement GB / channel / day @ 15fps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	**315.4**	**249**	**49.8**	**10.8**
Detailed	**240.7**	**182.6**	**37.4**	**9.2**
Good	**149.4**	**116.2**	**24.9**	**7.5**
Standard	**99.6**	**74.7**	**20.8**	**5.9**
Medium	**74.7**	**49.8**	**16.6**	**5**

B.1.5. MPEG4 Storage Requirement GB / channel / day @ 10fps

Quality	1280*1024	1280*720	640*480	320*240
Excellent	**249**	**190.9**	**41.5**	**9.2**
Detailed	**182.6**	**132.8**	**33.2**	**8.3**
Good	**116.2**	**91.3**	**20.8**	**6.7**
Standard	**78.9**	**58.1**	**16.6**	**5.4**
Medium	**58.1**	**45.7**	**14.5**	**4.2**

B.1.6. MPEG4 Storage Requirement GB / channel / day

Image-Size	Quality Setting	Frame-Rate Setting	Storage Requirement
1280*1024	6144	15	**431.6**
1280*1024	6144	10	**522.9**
1280*1024	2048	15	**182.6**
1280*1024	2048	10	**182.6**
1280*1024	512	15	**45.7**
1280*1024	512	10	**45.7**
1280*720	6144	15	**522.9**
1280*720	6144	10	**522.9**
1280*720	2048	15	**182.6**
1280*720	2048	10	**182.6**
1280*720	512	15	**45.7**
1280*720	512	10	**45.7**
640*480	6144	15	**522.9**
640*480	6144	10	**522.9**
640*480	2048	15	**182.6**
640*480	2048	10	**182.6**
640*480	512	15	**45.7**
640*480	512	10	**45.7**
320*240	6144	15	**182.6**
320*240	6144	10	**149.4**
320*240	2048	15	**182.6**
320*240	2048	10	**149.4**
320*240	512	15	**45.7**
320*240	512	10	**45.7**

B.2 VGA Model

B.2.1. H.264 Storage Requirement GB / channel / day @ 30fps

Quality	640*480	320*240
Excellent	**66.4**	**10**
Detailed	**37.4**	**8.3**
Good	**24.9**	**5.9**
Standard	**16.6**	**5**
Medium	**15**	**4.2**

B.2.2. H.264 Storage Requirement GB / channel / day @ 15fps

Quality	640*480	320*240
Excellent	**41.5**	**8.3**
Detailed	**24.9**	**6.7**
Good	**20.8**	**5**
Standard	**15**	**4.6**
Medium	**12.5**	**4.2**

B.2.3. H.264 Storage Requirement GB / channel / day

Image-Size	Bitrate Setting	Frame-Rate Setting	Current Bitrate	Storage Requirement
640*480	6144	30	**6300**	**522.9**
640*480	6144	15	**6300**	**522.9**
640*480	2048	30	**2200**	**182.6**
640*480	2048	15	**2200**	**182.6**
640*480	512	30	**550**	**45.7**
640*480	512	15	**550**	**45.7**
320*240	6144	30	**6300**	**522.9**
320*240	6144	15	**5500**	**456.5**
320*240	2048	30	**2200**	**182.6**
320*240	2048	15	**2200**	**182.6**
320*240	512	30	**550**	**45.7**
320*240	512	15	**550**	**45.7**

B.2.4. MPEG4 Storage Requirement GB / channel / day @ 30fps

Quality	640*480	320*240
Excellent	**116.2**	**20.8**
Detailed	**83**	**13.3**
Good	**49.8**	**10**
Standard	**33.2**	**7.5**
Medium	**24.9**	**6.7**

B.2.5. MPEG4 Storage Requirement GB / channel / day @ 15fps

Quality	640*480	320*240
Excellent	**74.7**	**15**
Detailed	**54**	**11.7**
Good	**37.4**	**8.3**
Standard	**25**	**6.7**
Medium	**16.6**	**5.9**

B.2.6. MJPEG Storage Requirement GB / channel / day

Image-Size	Bitrate Setting	Frame-Rate Setting	Current Bitrate	Storage Requirement
640*480	6144	30	**6300**	**522.9**
640*480	6144	15	**6300**	**522.9**
640*480	2048	30	**2200**	**182.6**
640*480	2048	15	**2200**	**182.6**
640*480	512	30	**550**	**45.7**
640*480	512	15	**550**	**45.7**
320*240	6144	30	**5100**	**423.3**
320*240	6144	15	**2800**	**232.4**
320*240	2048	30	**2200**	**182.6**
320*240	2048	15	**2200**	**182.6**
320*240	512	30	**550**	**45.7**
320*240	512	15	**550**	**45.7**